

PRINCIPLES

OF

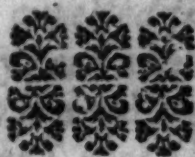
Natural Philosophy

MADE EASIE:

From a NEW

HYPOTHESIS

Not, hitherto, Advanced.



L O N D O N:

Printed for R. Smith, at the *Angel* and
Bible without *Temple-bar*. 1706.

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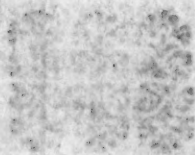
Natural Philosophy

MADE EASIE:



Not hitherto Advanced.

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LONDON

Printed by J. Smith, at the Angel, in St. Dunstons Church-yard, 1793.

AN
APOLOGY
For the Ensuing
PREFACE.

HAVING, in some of my Thoughts, come too near Mr. Hobbs's notions, lest I should meet with his fate, and be censur'd as one who endeavours to prosecute the same end. I judg'd my self oblig'd to satisfy the world of the honesty of my Intentions: and to shew (as well as may be expected from one who does not profess Divinity, and whose time has been, too little, taken up in reading, and considering, the Scriptures) that I have endeavour'd to chuse, from all Philosophers, only such Principles as may serve to make men have a natural knowledge of themselves: and reconcile this knowledge to Divine Revelation: so that, even from natural Philosophy, they may receive such instructions as may influence their actions, and incline them to vertue.

But for me (my time having been, wholly,
employ'd

An Apology for

employ'd in the studies of natural Philosophy) to undertake such a task without exposing my self to Divines, (whose studies I must, of necessity, have encroach'd upon) would have been impossible, and to have omitted adding something, of that nature, might prove dangerous; and expose my honest meaning not only to the mistakes of virtuous, and zealous, persons, but to men of vitious, and deprav'd inclinations: who might make an ill use of such instruments, as I have endeavour'd to frame, for a contrary use.

For these considerations, I suffer'd some notes which, formerly, had been the effect of a florid, juvenile, fancy, for the private entertainment of a person of quality, to be transcribed, and join'd to papers, to which they never were design'd to belong.

The conjectures, whatever they are, I presume may escape censure, since I profess them not design'd to bias any ones judgment; if they carry but a shew of morality with them, I have my end.

Nor do I think it necessary to oblige my self to rest satisfied, of the truth of every conjecture, delivered in the following Preface; since the whole was but a sudden thought; the effect of but a very few leisure hours: neither have I thought it worth my while to alter any of the thoughts; having nothing but barren conjectures,

the Ensuing Preface.

Conjectures, to substitute in their places ; should I cancel any of them.

As for the book, or the natural account I have deliver'd of bodies ; it being the effect of some years study, and experiments, I may, with modesty enough, think myself capable of delivering something on that Subject, to the purpose. But really, so far am I from having a fondness for any offspring of my own brain, that I shall always reckon any of its products spurious ; unless made legitimate by the general vogues, of learned, and ingenious, men, 'tis this jealousy of my own performances indeed, that makes me, with so much haste, suffer this little tract to be published : for had I rested, altogether satisfied, of the truth of every particular, I have delivered, I had taken more time to have methodiz'd my arguments, and set the whole off with Sculptures, to a much better advantage : resolving to suspend the judgment of my own thoughts, till I heard what opinion others would have of them ; delay would have proved too great a mortification to that tender part of me (for, I must own, I am very inclinable to embrace, with pleasure, any thoughts of mine that are brought forth with reason) which always endeavours to do justice to any reasonable issue ; and free them, as soon as possible, from the doom I, quickly, pass, upon all unreasonable notions

An Apology for, &c.

notions (tho' of my own begetting) when I know them to be so.

In fine, by this means, I shall, soon, find out in what manner I may, best, dispose of my time, for the future, to make my studies useful to the world, or easy to my self: for I can never be easy in my mind, whilst I fancy I may have some thoughts that might prove serviceable to the publick: but if my capacity be not large enough to answer my designs, I shall, by this means, find out, and with as much contentedness, sit down, and please my self, with my own thoughts, as ever I took pen in hand to please the world.

THE

THE
PREFACE:
BEING

*An Enquiry after a true
Criterion, or Rule, to
guide our Reason,
and Judgment of
things, by.*

THE perfection of An-
gels, and blessed Spirits,
consists in their having no dissen-
tious opinions one from the o-
ther : but all have the same ap-
prehensions of things, compar'd
A 2 with

with the innate knowledge they have of the Deity; and their increase of knowledge consists in making the conception of every new object, they perceive, square with the true conception each frames of the Deity; which makes them also to agree among themselves: according to the old Axiom in Philosophy; those things that agree to the same third principle agree among themselves. To express this their conception of things there needs no words, or such mean comparisons, as Mortals are forc'd to make use of, to discover their Souls (or apprehensions of things) to one another: because
every

The Preface.

v

every part, of the Soul is an Eye and Ear which discovers whether any object in the Soul (that associates with it) differs either in colour, or sound, to the conception it has fram'd of the Universe: as a skilful Ear in Musick must know whether such an Instrument is out of tune, and unfit to joyn in consort with his; which, he has some certainty, is tun'd to the rest of the Instruments of his consort. Everything therefore that a happy Spirit comprehends, he compares, first, with the apprehensions, and knowledge, he has of the Deity: and, secondly, with its acquir'd knowledge that it has, already, obtain'd

tain'd of things ; which can be only, thus far explain'd by Mortals, viz. that it tends to make them know the Happiness, and Enjoyment, they have in the society of each other ; and square all their apprehensions, and comparisons of things with that rule, which makes them thus agree in one voice, or harmonious concord. By this means they all think alike : nor does the greater knowledge which some Spirits obtain, above others, contradict this : for it only happens from the opportunity (which may be by the greater diligence, or greater proneness of the Soul that some happy Spirits have beyond

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yond

yond others to action) comparing more things, and making them square, with the apprehensions they have of the Deity; and yet, at the same time, agree, in every thought, as well with those that are co-ordinate with them in knowledge; as with those that are inferior, and superior to them: their knowledge consisting only in a comparison of all Beings, whether Body, or Spirit: with the principles, and light, the Deity has afforded them, of its own nature; and the comparison they have, already, made of things which agreed in concord with the voice, or sound, of the society they have had

with intelligent, or happy Beings.

Before the fall of Angels there was, in Heaven, this perfect harmony; that every opinion, conception, or notion, of any new object, squar'd with the receiv'd opinions of all the heavenly Host; and tended to the promotion of the heavenly Society; by giving them a, more clear, Idea how impossible it would be to expect, and enjoy, that perfect tranquillity, and happiness, without Unanimity, and Concord: and, the more knowledge the Spirit acquir'd; with the greater warmness, and eagerness, did it embrace this
Society

Society ; as having the greater, and more perfect, Sense of it : until Lucifer, an envious Angel perceiving, that (tho' he still increased in knowledge, and truth, yet) there would always be a Being or Beings more knowing than he, for (tho' he was an Arch-angel, he need not be suppos'd to have been the most knowing of them) he suppos'd that this only, accidentally, happen'd from his wrong conception of things : and that all happiness, or knowledge, did not consist in the Society with the blessed Spirits : but that if he should, once, break off Society with them ; he might be, then, the most knowing Being

ing himself; for that, whilst he continued in the Society, he was in, he must, still, acknowledge a Supream; attributing his Subjection to be only an accidental consequence, in the disposal of things at first, and that all Spirits had, lazily, acquiesced to this Supremacy, of another over them. He therefore suppos'd, by some alteration, in the form of his conceptions, he might, at last, bring himself to the pass to be equal with the Supreamest Being: thinking no other difference betwixt the most High, and himself, than his false conception, that he had received all this while, of things; in suffer-
ing

The Preface.

xi

ing himself to have a bounded opinion, of his own Knowledge; and yet conceive, or believe, a Being, that he must suppose to have a boundless knowledge; at this apprehension, or voice, of things: (for the apprehensions of the Soul, free from the Body, may be represented to our understandings; as a sound of a great many instruments, playing concert to one another; all which the Soul receives, and apprehends, at once; as the Ear does Musick.) There was a discord heard in the Heavenly Choir; from which all, rightly tun'd, and well dispos'd, Spirits, fled: as being

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a sound destructive to their Harmonious Society. Some there were, who thought that sound suited best with the imperfection of their knowledge ; and tun'd their voices to it ; losing the right rule, or square, by which they us'd to form their conceptions. Each thought himself more knowing than other, and would not acknowledge Lucifer to be superior ; who, really, had acquir'd more knowledge than any of them. By this means Lucifer still continues the craftiest of them all ; as having had more knowledge before the fall : and, by his Craft, not their obedience to him, keeps them in Subjection ;
and

and gains himself the Dominion over them : but this knowledge never increased ; but, on the contrary-wise, proportionably, decreased : in each, every one (suitable to the principle Lucifer had first form'd) thinking it a wrong conception of things, to allow a superior, or a more knowing Being : this destroy'd Society ; and this, only, is their Damnation, viz. that they, each, strive, with utmost power, to degrade, and make unhappy each other.

It griev'd the Heavenly Society, thus, to lose so great a number of their Consorts ; therefore to make up their number

ber, and, as it were, to provide against any such Rebellion, by suffering Beings to be created out of the meanest original (that, knowing this, they might be affected with a perfect Humility; and yet that the Being might have a Free-will, and Power, to rise to the perfection of the highest Angels) the Divine Spirit entred into matter; and so purified it, as to give it a perfect knowledge, and Idea, of its Essence.

By this innate principle, or knowledge, of the essence of God, the first man Adam was capable of a true, and perfect, Knowledge of all created Beings,

ings; only by comparing them with the inspired Idea he had received of the Deity: but this Idea, was shadow'd or clouded, by Adam's material Organs, so that there was something in the essence of the Divine nature which he could not, perfectly see: this defect was to be worn off, by the, further acquir'd, knowledge that Adam was to gain; therefore what Adam did not apprehend of the Divine Nature, by immediate inspiration, was told him by a comparison of something that he could conceive: as also if he made a wrong apprehension, and Judgment of things, the consequence
that

that would follow was Death, and a farther separation from the knowledge, and society, of happy Spirits: which Society, tho Adam did not then, absolutely, enjoy, because he had not so full a knowledge of the Deity, as the Angels; yet, had he acted according to what was told him of the Deity, (his want of full knowledge being supply'd by comparifons) he had, at last, brought his reason to comprehend the full, and true, nature of the Deity; and the reason of the Comparifon, call'd a command: because he, having no knowledge of it, was neceffitated to make it an act of faith and, consequently,

The Preface. xvii

consequently, of obedience: all commands having a relation to comparison, and human understanding, is nothing else but a comparing of things more obscure, or unknown; by things that are more known: whilst Adam squar'd his actions to the inspir'd Idea he had of the Deity join'd with the relation (or the comparing of those things he comprehended with those he did not) he received, from the Deity, concerning its Essence, and will, and the nature of Happiness, and Misery, he was happy; and in a road to immortalize his body: and make it fit for the Society of Angels.

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But

But the Devil (whose envy led him to the destruction of all happy beings) upbraided him, or, at least, the effeminate part of him, with want of knowledge; and his simple obedience to he did not know what, rais'd his curiosity to quit his rule or guidance by the relation or comparison he had received of the Deity; and, consequently forsaking the true square, or Norma of his conceptions; all his thoughts being drawn then from irregular, and crooked, appetites, and Desires, must, certainly, be erroneous; for if the rule be crooked, the lines, drawn by it, must be crooked also:

The Preface. xxix

also: 'tis plain man (left thus without any guide, or true notion of things) must, according to the irregular conception he receives of one thing, form the conception of the next thing he sees irregular to agree with the former conception he had fram'd.

To explain this will require a small reflection on human Understanding. Adam having once introduc'd a false notion of the Deity, the consequence must be, that the next thing he sees (comparing it to the mistaken notion he has of the Deity) he will, likewise, have a wrong notion of it; and the next thing that offers to his Sen-
a 2 les

ses, after that, he will form his judgment of it more erroneous than it was of the former : that being not only squar'd to the wrong principle he has receiv'd of the Deity ; but also to the erroneous Judgment he has fram'd, to his mind, of the other misapprehended substance. For as in numbers a mistake, tho' but of an Unite is small, yet when it is multiply'd, and added, the error, at last proves very great, according to the largeness of the Summ. Had Adam gone on, long in framing conceptions of things, according to his wrong notion, of the Deity, he, doubtless, would have entangled his mind so deep in error,

The Preface. xxi

error, as never to have been able to have free'd his thoughts from so intricate a Labyrinth of falshood. But he, very soon, found the discord of his opinion; and, according to what twilight of true reason that was left him, (for the true light, or inspir'd notion, of the Deity had not, quite, mov'd below the Horizon of his understanding) compares his actions, or the judgment, he had form'd (and was like to form) of things, and found it not to agree: he therefore, was resolv'd to make no more judgment of things, according to this principle: but with fear, and shame, endeavour'd, again, to
a 3 attain

attain to that knowledge, he had lost : and, tho' he, so lately had dissented from the Knowledge of it, yet when some shadowed resemblance, of the Divine Spirit offer'd it self to his fancy (so had the mistaken notion, he suffer'd to enter his Soul, darkned, and chang'd, the glass by which the vision of things were truly represented to his reason) that he, scarcely, knew the truth ; but is afraid, and hides from, it ; and yet is more afraid of falshood : since it was impossible to purifie his Soul, which had suffer'd error, and mistaken notions, to mix, and incorporate with it, (as when one pure and
simple

The Preface. xxiii

simple liquid is tinged, and corrupted, by the admission of another, the separation is not easy) immediately, from error; the former notion he had of the Divine Essence, together with the privative comparison, to make up the defect of his conceptions (viz. that God was not to be apprehended by such, and such, resemblances, as were forbidden him to make of the Divine nature,) recollecting as much of this lost notion as was possible for him in that degenerate state; he forms, first, these thoughts of himself, viz. that his mind had been free from error; but now falsehood

ting'd the whole frame of his Soul :
and that, for a long time, he must
not expect to make a true, and
right, conception of any thing.
Besides he found, by his mistakes
of things, that that part of him
which was material, and was to
be improv'd (and receive ad-
dition from matter, according
to his own will) must, now, be
liable to all Accidents which
his wrong conception would, in-
evitably, bring upon him : for,
of necessity, when he began to
be ignorant of the nature of any
body, he could not tell what ope-
ration that body would have
when join'd with his ; or the dis-
position one body has to de-
stroy

stroy, or oppose, another. This he, plainly, foreseeing, knew that the accidents he was liable to, and would, by his wrong Judgment of things, unavoidably, fall upon him; would, at last, prove the separation, or dissolution, of the tie betwixt his body, and Soul; and that his Soul, after its freedom from matter, might (by the dark notion he then conceiv'd of the Deity, if it consented no farther to make a wrong Judgment of things, but humbly own'dt he error that had insinuated it self into his substance, and compared all things according to the privative notion that he had a-fresh conceived of the Deity,
viz.

viz. that he was not of a bodily substance) at last, come to the same perfection of Knowledge of the Divine essence, that it had lost; and the body, by suffering a dissolution with the rest of matter, might bring it self to such a state that the Soul, inspir'd with a true knowledge of the nature of things, might only pick out, and chose, such parts of it as are fit, and will unite, and square, with the notions the Soul has receiv'd of the Deity; and those other things that have offer'd themselves to its ratiocination: which have all agreed to the received opinion of the Deity. Since we have there-

The Preface. xxvii

therefore thus consider'd Adam as he repents, and sticks to his obedience, viz. the privative knowledge he has of the Deity: for the knowlege of the Divine essence, which Adam had before his error, was not perfect; only enough to give him sufficient understanding of all matter: that, thereby, he might not joyn absurdities together, which might, at last, destroy his own body; which was matter also. All the rest of the Divine will was resembled to him by a privative example, viz. (that what he did not understand, of the Divine essence, was not to be compar'd to any thing he had, already, a resemblance of. It

xxviii The Preface.

It may not be amiss, a little, to think on his State had he not repented ; but cast off all thoughts or notions of the Deity. To represent him in this state, we must suppose a man in perfect strength ; having a reasonable Soul, and all the Organs of the body (by which the Soul operates) in perfect Vigour : (to obviate what might be objected of Children's not having a right reason of things, because of the weakness of their bodily Organs :) this man must be brought, in this state, into the world ; without any thought or notion of the Deity ;

The Preface. xxix

ity ; or of any other thing
whatsoever. The first thought
that any may suppose such a
person will have (for having a
rational Soul, he must have
thought) may, justly, be sup-
pos'd to be of himself. This
thought can extend it self no
farther, than that he is some-
thing which has desire and ap-
petite to matter : for having no
notion of the Deity, or of his
own state ; what he is, or how
he came there, he must be, whol-
ly, ignorant of ; as also that he
is mortal, and that he is a crea-
ture capable of human society :
and that there are, have been,
or shall be, other intelligent
Beings

xxx The Preface.

Beings *besides* himself: *all this,*
he being ignorant of, he must, of
necessity frame a wrong Judgment
to himself.

The next thing that he meets
with, or thinks on, he can have
no other way to represent it to
his fancy; than by compa-
ring it to the thought he has
fram'd of himself: which be-
ing false (as, suppose, never see-
ing any person, he might think
himself immortal) the notion
of that cannot be true, or
streight; because 'tis made to
agree with the irregular
thoughts he has conceiv'd of
himself.

The next thing he makes a
Judg-

The Preface. xxxi

Judgment of, *must be more erroneous than the former : because he does not only make it agree with the error he receives, in the opinion of himself ; but also with the error he has conceiv'd in the wrong Judgment of the other body, compar'd to himself. And thus would his error increase, and multiply, until it bring him to conceive the vilest absurdity ; and, consequently, order himself, and his actions, in the greatest disorder, and confusion.*

If we suppose another man in the same condition with the former ; no one can be, easily, brought to believe he shall, exactly

xxxii The Preface.

actly, have the same thoughts with the former : because both frame their thoughts, and notions, of things, by wrong, and crooked, principles. These two, not agreeing in their thoughts of things, will neither agree in the disposition of them; and, consequently, quarrel, and destroy, each other. This is Sin, the nature of which, if rightly consider'd, will appear to be nothing but the ignorance of bodies, and their effects; when joyn'd together, with the disposition one body has to destroy and ruin, another. Any other thought of sin wou'd be blasphemous; for instance Blasphemy

The Preface. xxxiii

phemy (*speaking contemptibly, or framing, in the thought, mean comparisons of the Deity*) is, no otherwise, a Sin, than that it causes, in the Creature, a less true knowledge of the Deity, than it had before : either by thinking on the Divine essence, by some mean comparison ; or making the thoughts we have of it (*tho' compar'd to no bodily substance*) too familiar, and consonant, to the slightest, and idlest, apprehensions, we have of things.

For to think of God (*as we would of a revengeful man*) that because man speaks revilingly, or scornfully of him, he will punish
b him

xxxiv The Preface.

him for no other reason than to vindicate his honour; will insinuate, into the apprehensions, so fram'd of the Deity, an equal absurdity, to what was conceiv'd of him under the meanest comparison: by thinking of his essence under the notion of a revengeful Spirit: and tho', by the writing of holy men (who, by their endeavouring to surmount the ignorance, crept into human nature, by some peculiar mystery belonging to the Divine Essence, attained to some glances, or shadow, of the perfect truth) the Deity is represented with passions as of anger, &c. this is occasioned by the great ignorance

The Preface. XXXV

ignorance of man : for all the motives of the passion of (Love, Concord, Harmony, &c. being resemblances that represent the Divine nature with more similitude than any other comparison) would never move an ungrateful mind, or work upon it, to have a better conception of things, with so much Sympathy of nature, as his comandly mind is forc'd, and aw'd, into compliyance with the truth, by the silly passion Fear.

The nature of sin will be better understood by reflecting on its Original : therefore, again, Adam is to be brought on the Stage in Paradise ; here he has a perfect

xxxvi The Preface.

fect knowledge of all things he sees: and knows what effect any body, he sees, will have, if it be joyn'd to his: all this he knows by the knowledge he has of the Divine nature, and of himself: consequently he knew the nature of poisons, or poisonous fruits: (for to suppose there were no such thing would be absurd; and to suppose Adam knew not the effect, or operation, they would have in his stomach, if they were swallow'd by him, would be absurd also: for, by that means, his curiosity might have led him to have tasted, and have poison'd himself. Adam knew the nature of every body on Earth (except of the fruit of one Tree) and therefore

The Preface. xxxvii

therefore, in that, could not err; for had his curiosity led him to eat of any poisonous body, that he knew so, to try the effect, yet, immediately, upon the pain, and the Danger, he found himself in, knowing from whence his disorder proceeded, and what would remedy it, (for knowing the poison and all things besides, he certainly must know an Antidote) would have had recourse to a Medicine, by the knowledge he had of things, upon any such accident.

This knowledge is, properly enough, resembled by the tree of life, made mention of in the history of Adam: but the nature of the fruit of one tree he did not
b 3 *know;*

xxxviii The Preface.

know ; neither (should he taste of it) could his knowledge direct him to an antidote. The nature of the poison of this tree was only, like that of other poisons, destructive to his body ; and had no immediate operation upon the soul. But I shall, hereafter, endeavour to prove that the disorder, or irregularities, of the Body, is what causes disorder, and irregularities in the soul. Adam (reflecting upon himself, and the thoughts he framed of the Divine nature) finds, according to the principle he guided his reason by, that this tree, should he taste it, would bring death, and destruction

The Preface. xxxix

ction, to his body. But this only, of all the things in the creation, was a Mystery unto him: tho' comparing it again to the right, and Divine, rules of reason, (which consists only in a knowledge of the Deity, and a conformity of thoughts with those of their associates: for Adam, by this time, had got a companion, who, in every thing, thought as he did; in which consists the blessing of Society) he finds it will cause death; and Eve thinks so with him: and whilst they, thus, continued in the truth they were both happy. But Eve, who did not, so perfectly, know the Divine na-

xl The Preface.

ture as Adam, was tempted by Satan, to taste. Adam, perhaps, had he seen Satan in the form of a serpent, had known him to be an Evil Spirit, by the innate knowledge he had of things : but Eve was later come into the world ; and, what she wanted of Adam's knowledge, she was to be instructed in by him ; therefore was, easier, tempted : and, coming to Adam, he might, immediately, see a change, or an unharmonious sound, in their thoughts : therefore he thus reasons with himself; According to one principle by which I judge of things, (viz. the Divine will,) this partner

partner, or associate, must die and I shall live without her : but, according to the other principle that I reason by, (viz. making all conceptions of things to agree with the conceptions of my Associate) she shall not die : and some other Being has told her so : therefore, perhaps, I am in an error, and have a wrong notion of the Deity. I cannot bear the wracking thoughts of parting with the joy, I receiv'd, in thinking of all things in comfort with my Dear companion : therefore, in this, I must think with her, I shall not die, I'll eat and try.

Thus did they, both, poison
their

their bodies ; and make the organs, or material instruments, by which matter was to be refin'd, and joyn'd to the rational Soul, liable to change, and destruction : and, consequently, unfit to perform that function. Could Adam but have found an antidote to this poison, that might have preserv'd his body from death (for such a one it may be suppos'd there might have been in nature) he had, for ever, liv'd; but most miserably wretched : for tho' he, always, liv'd, free from Death; yet, always, subject to disease : to prevent this, his understanding was distracted by a wrong, and wavering

The Preface. xliii

wavering notion, of things :
(represented by the flaming
sword, placed to guard the tree
of life) these distractions, and
waverings in his thoughts, pro-
ceed from his loss of the Divine
will : and from the confusion,
distraction, and discord, be-
tween him, and, his wife, Eve;
these two things (viz. confor-
mation of thoughts to the Di-
vine will, and to make them a-
gree with the thoughts of his
Associate) being the only rule,
or criterion, he had to judge, of
things, by : finding a distracti-
on in both these, (for it may be
suppos'd that he had lost his no-
tion of the Deity ;) and also
the

the unconformable thoughts they had, and different apprehensions of things, seem to be insinuated in their being ashamed of one another; and hiding their nakedness from one another: which may be construed of their minds as well as their bodies. This discord (had it been between any others, in that state of sin, when the poison, newly taken, was in the height of its operation) it had, very likely, carried them to immediate destruction of each other. But Adam, squaring his conceptions according to one of the principles of Virtue, laid down, viz. the love and desire he had
to

The Preface. xlv

to conform his thoughts with the thoughts of Eve (who was the only intelligent Being he knew; since the loss of his Union with the Deity) found that, according to the principle each other form'd to themselves, they could never agree in sentiments. Adam persuaded Eve (who out of love to Adam, or the one, and only, principle of right reasoning, or comparing of things she had not dissented from) hearkens to his reasonings: he can propose nothing to her, but that she may consent, with him, to acknowledge themselves in error, and ignorance; and to look back on the lost notions of the
not Deity

Deity (as well as their disturb'd, sickly, and poison'd, Organs would permit) to find if there might be any relief, or redress, from this their calamity; which she, consenting to this Harmony in their minds, for a glimpse, or moment, as it were, asswag'd the fervour of their poison'd bodies; and they, both, beheld the nature of the Divine Essence. At first it startled them; they were afraid, and hid themselves: but it, seizing on their reasons, shewed them their condition that they had both poison'd themselves: and, by that poison, had so vitiated the taste of their reason

The Preface. xlvi

reason, by which they were to give Judgment of things, that they must die however ; if they did not consent to give any further erroneous Judgment of things : but stuck to the principle that was left, viz. the love of one another, and an endeavour to conform both their thoughts with what dark knowledge they might keep of the Deity. There might be found a way to deliver their Souls from the poison that had tainted their bodies, by suffering the body to undergo a dissolution : and, if the Soul adher'd, firmly, to its two principles, of right reasoning, it might choose, to it, those parts

xlviiii The Preface.

parts of the body, which have been fitted, in this life, by the operations of right reasoning: leaving behind it the rest; to which adhere the particles of poison, that caus'd ignorance and error.

To maintain this Hypothesis it will be necessary to suppose, (which to me does not seem absurd, viz.) that the Soul shall, at the resurrection, gather together all the parts, as well those that remain, as parts of its Substance when it died; as those that were, daily, sent off by insensible perspiration: so that those parts which have been sent off, or spent, by the labours of Divine
vine

The Preface. xlix

vine reasoning, suited to the two principles, viz. the right notion of the Deity, and love to our neighbour, will be the only particles, or parts, that a Soul, endued with the faculty of right reasoning, will chuse: but a Soul who has spent all its life in some, very gross, errors, or wrong conformity of his actions, to the two, aforesaid, principles, it, indeed, shall have all its body represented to it to choose what of it it pleases; but for want of right knowledge of the Divine essence and a mind suitable to conform to heavenly Society, it cannot separate the poison from its
c body

1 The Preface.

body ; and, consequently, must take its whole body up, mixt as it is with the poison : for the poisonous parts are the only parts that have not been affected with an intelligent Spirit : and, consequently, if the Soul cannot get rid of them, it can get rid of no other part : for those parts that have been affected with an intelligent Spirit, will have, what is call'd, a Sympathy to the Spirit, by which they were affected, or bear some part of the memory, or power of reasoning, with the Spirit, by which they were affected : which was the first design of the Creator, in confining his Divine Spirit

rit

The Preface. li

rit in matter; that matter might be affected and purified by it; but the particles of poison, that have corrupted nature, are such as are incapable of being affected by the intelligent Spirit; and, consequently, can't rise of themselves: only as they have incorporated, and are carried, by other particles of matter, which have been affected by this intelligent Spirit.

To recapitulate, the whole design of this preface is to find out, and lay down, some rule, or foundation, or, self-evident, principle, to compare all things in the Universe, that offer themselves to our understanding;

and give names, unto them (as Adam, at first, did to things in Paradise :) which is to form conceptions of things (names being only the manner by which those conceptions are delivered to one another) if there were any method to find out whether the thoughts of another, were agreeable to his : as, in Paradise, they were known by the tuneableness, of them, or found they gave at the sight of things ; and this found judg'd according to the rules of harmony, there would be no need of expression or speech : but where human nature is so poison'd that scarce two persons think alike, and, consequently,

The Preface.

liii

consequently, not knowing, or ever hearing, the harmonious sound of concord, cannot judge whether their Sentiments of things are conformable to those of another, without some sounds, or figures, that shall signifie the thing it self; the quantity, and quality, of the thing, and the motion, or action, it is in, or what it suffers by the motion of another, or other, things. These sounds, or figures, are call'd Speech; design'd only to comply with the discord in human nature (by comparing Sentiments together) and, thereby, finding out the degrees of discord. For tho' perfect concord

cannot be found out ; yet (by comparing every ones Sentiments) it may be seen whose Sentiments come nearest with the tune of another : and what Sentiments or Sounds , of things, come nearest to the uniting of the voice of all Mankind.

But because the Laws of nature, or the Laws of God (for I make no distinction, considering that the conceptions that we have of the Laws of God, are that they make us keep within the bounds of our nature) have implanted in us, or, rather, left undemolish'd, in the ruins of our nature, a spark of the Divine

The Preface.

IV

vine desire, or heavenly love tho' so little that it cannot, extend to make an harmonious conversation betwixt above two persons; and very seldom betwixt two it self: it has fram'd them so, that two persons (tho' never to exceed that number) may joyn their minds; by mixing of their blood, and spirits: from which the parts, of matter, that act upon the Soul, are fram'd so that by this mixture, and alloy, a sympathy in thought may, thence, arise to give them some Idea of Divine conversation.

I have led my self into a Subject that will bear several reflections.

C 4

First,

First, It may, reasonably, be suppos'd that before Adam, and Eve's being poison'd, there was no distinction in Sexes; because their Love was perfect: neither had they the least inclination to think contrary to one another because, in the conformity of their thoughts, their harmony, or pleasure, consisted in the embracing of each others thoughts; not in the more gross embraces of the body: nor will this notion destroy the propagating faculty, suppos'd to be implanted in them, in the state of innocence. We may, very well, reason from the knowledge they had (or, at least, would have acquir'd

The Preface. lvii

quir'd, had they continued to reason according to their two principles, the knowledge of the Deity, and of themselves) of matter in general ; and how it was capable of being affected with some of the intelligent Spirit, they enjoy'd ; that they would have power to inflate matter with their own Spirit, or form, without, either receiving the matter within their form, or suffering pain by it. The thoughts of either of them, singly was not enough to accomplish this creation , (which, certainly, the Divine Spirit had, after creating them, put in their power to accomplish after the same manner)

ner) because this creature was to be made by a Creator : and Adam, by himself only, compar'd things according to the knowledge he had of the Deity. But when Eve was given him, as a partner to think with, he, then, compared things not only to the knowledge he had of the Deity ; but to the pleasure, and harmony, he received in an associate of his own likeness : and, by this harmony, that they both receiv'd (for harmony must, at least, consist of two sounds) they would have found out a way to have fram'd matter in such a manner, and inspire it, with some of their own Souls, tuneable to the harmony

The Preface. lix

mony they found in the joint sounds of things.

The thought will be more clear by this comparison: God made the Soul of Adam (as a skilful musician makes his first pipe in an Organ tun'd to a certain pitch for consort) tun'd to a pitch fit to join in consort with the heavenly Societies. But Adam, at first, (being not, thoroughly, skill'd in the rules of Divine harmony, or Society) had he gone about to have fram'd a sound, which must have been different, (in this lyes the mystery of harmony) and yet in concord, to his own; he might, as likely, have fram'd it a discord,

cord, as a concord : because he had not a perfect knowledge of the musick, or pitch he was to tune it to. This Adam knew by what knowledge he had of the Deity : and yet, very desirous to have a companion, forsook his body with part of the matter that he found, fitly modified, unpoison'd, and rightly, prepar'd to be join'd, and united, to his body, went into the presence of the Deity ; which, while in his body, he could not, so perfectly, see (therefore, whilst Eve is said to have been creating, Adam is said to have been in a deep sleep ;) and got this matter, which he bore

The Preface. lxi

bore with him, tun'd, and fit to
make an harmonious sound to
his. This was his pleasure that
he had a companion who, in-
deed, spoke, or sounded, to
him differently of things : but
this difference was in concord ;
and when compar'd to the Divine
spirit, and himself, it agreed,
and was harmonious. It was
none of the smallest pleasures
to them, both, to reflect how, tho'
they, thus, differ'd in sound,
yet that they did agree, and both
were true to the rules of harmo-
ny ; and (in reflecting on the
reason of the difference) they
found this, and many differences
more, might sound in concord,
and

lxii The Preface.

and all be join'd in the wisdom of the Deity. When, therefore, these two perceiv'd wherein harmony consisted, 'twas reasonable to suppose they might have inflated matter with some of their Spirits, and given it a voice according to their own.

Secondly, How contrary to the laws of nature, and true knowledge, they act, who receive, to their embraces, diversity of objects : for nature, in that reciprocal extasie of mind, not only gives two parties, thus meeting in desire, inclination, but means also, to mix their Souls by receiving, from each other, those parts of Spirits which have been

The Preface. lxiii

been affected with the animal heat, fire, or Soul, of each other: which Spirits, thus modified, must have some inclination towards the will of the person in whom they were prepar'd; and, consequently, affect the person that receives them, with something of the will of the person from whom they were receiv'd: since it is not only difficult, but, almost, impossible, to find three persons, whose will shall, in every respect, agree. How distracted his thoughts must be, that is, thus, affected by the differing, and, sometimes, extravagant, wills of several persons; I leave him to judge, who, at
any

any time, has been disturbed with confus'd thoughts ; and a differing, and unsettled, judgment of things !

Thirdly , How unwisely they act who suffer, to their Arms, persons of, oppositely, differing conceptions ! for these contrary Spirits, affected with contrary dispositions, must, of necessity, meeting, cause great disturbance to one anothers judgments : to the destruction of love, or the union of thoughts (the consequence design'd by nature of their mutual fruition.)

Fourthly, How imprudent it is for a person of, more than ordinary, judgment, and knowledge,

The Preface. lxx

ledge, to debase himself, so much, as to consent to allay, or corrupt his, purer, mind ; by receiving part of the conceptions of a foolish, mean, or injudicious Partner.

Fifthly, *How* extraordinarily happy those persons are who meet, embrace, and join their mind unto one only person of a suitable, and an agreeable judgment, and inclination ! This love, or joint voice, or consent, concerning every thing they see, is the only, and best, rule, that mortals can have to compare all things (whether objects of sense, or reason,) with. This is the criterion : and this

d (with

lxvi The Preface.

(with what knowledge it is allowable for mortals to have of the Deity) makes the only principle of right reasoning, and human Society.

Man's Idea, or conception of things is simple, and can be employ'd about no more than one thing at the same time : (in this the happiness of unconfin'd Spirits, excels mortal happiness ; that Spirits see, judge, and converse, with many objects, at the same instant, and join in love, and transport with them all) and this one thing must be represented to him by a simple, or single, object. His love therefore, I say, (properly

The Preface. lxvii

so call'd, being that passion which comes nearest to the Divine Society, and friendship, of Angels) cannot be extended to two things at the same time: for whilst he is loving, or comparing his apprehensions of things to the love he has for the one; he cannot love, or compare his apprehensions of things to the love he has for the other: no more than he that's reasoning on a Subject, can give reason and argument, on differing Topicks, at the same instant.

The Preface

It is said, being with reason
which cannot be reached by the Di-
vine Society, and therefore
(Angels) cannot be reached
by two things at the same time:
for whilst he is loving, or com-
paring his apprehensions of
things to the love he has for the
one, he cannot love, or com-
pare his apprehensions of things
to the love he has for the other:
no more than he that is reasoning
with Subjects can give reason
in argument, or discussing
Topics, at the same instant.

R
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ly

A Letter to a very worthy, and learned, Divine; who objected against the publishing of the foregoing Preface.

Reverend Sir,

AS I esteem your judgment, so I can't but acknowledge your kindness, in affording it me so candidly, in relation to some papers I, lately, offer'd to your perusal:
d 3 nor

nor do I think it a small *mark* of your *sincerity*, and *tendernefs*, that your are pleas'd to *caution* me against the *censure* of the *world*; and point out, to me, failings that I am not able to justify.

The *commendation* you give the *Book*, or subject, matter it self, is enough to make me hope, that whilst I confine my *pen*, within my own *sphere* of *activity*, I may, at least, slip through the *cenforious* part of the *world*: But where I am forc'd (as 'twere) to venture *ultra crepidam*, 'tis there---

You are under the most concern for me; and there
indeed

indeed I should be under concern for my *self*, had I not this *plea* to make, that the *Preface* (the part you judge most liable to censure) was writ, when, in comparifon, I was a meer *Child*, and having, then, expos'd it to the view of some *friends*, I could not, now, alter any thing in it, without taking upon me the *vindication* of it; and to have undertaken a new *task* of that *nature* (for I think a *Naturalist* absolutely oblig'd to fay something of that kind) might, too far, expose my *weakness*, and the character, I have, fince, gain'd, by my *improve-*

ment in other studies ; whilst, in *Theology*, I can't pretend to have made any *advance*.

I am pleas'd with your taking notice of the *precariousness*, of what is delivered in the *preface*, concerning *Propagation* without *distinction* of *Sexes* ; for I find it dissonant to several places in *Scripture*, parti-

Gen. 9. 27. cularly, *Male and Female created He them.*

Matth. 19. 4. He which made them, at the beginning, made them *Male and Female*. I am now far from vindicating that thought : tho' I hope, by considering what grounds I, then, built it upon, to vindicaate my self from
being

to a Divine.

lxxiii

being thought, then, to have
broach'd notions without the
least darnings of reason. I am,
even yet, far from being sa-
tisfied that *Adam* and *Eve*,
whilst in the state of Innocence,
must have been forc'd to that
incommodious way of propagation
that mortals are subject to;
since that expression;
in sorrow shalt thou Gen. 3. 16.
bring forth Children, is reckon'd
a curse, and a punishment, in-
flicted on *Eve* for her disobe-
dience.

Considering well this text,
viz. Unto *Adam*,
and his Wife, did the Gen. 3, 21.
Lord God make coats of Skins, and
cloathed

cloathed them : it seem'd, as indeed it does yet, not altogether so plausible an opinion to believe that those *Skins* were *Skins* of *beasts*, taken off, and sewed together ; as to think, thereby, is meant the very *Skin* which *Mortals*, from him inherit ; and which they are born with : for to believe *Adam*, who had so well understood the nature of things, as to give names to all things, should be so ignorant as not to know how to make himself cloaths, is, in my opinion, too something precarious.

What seems to argue for this thought, is the curse, a little

le before, laid on the ground
^{verse 17.} (cursed is the ground
for thy sake) which curse must,
consequently, extend it self
to the air; since the air is
nothing but exhalations from
the earth; and where the earth
consists of barren, marshy,
or nitrous soil; the air is af-
fected thereby. If the earth
was of a purer mould before
the fall, the air must also
have been of a more ætherial
substance; if so, the organs of
man, that were created for a
more ætherial region, as Para-
dise may be suppos'd to be,
must necessarily, without some
natural tegument, be incommo-
ded,

ded, when, immediately, brought into a grosser region; so that, before man is absolutely turn'd out of *Paradise*, God takes care to cover him with such matter as may be an armour to him against the rough assaults of the climate he is to be forc'd into. I could easily perswade my self, to be of an opinion that the want of these *Skins*, wherewith *Adam* and *Eve* were cloathed, after their disobedience, were, whilst in their Innocence in *Paradise*, none of the smallest grounds of their happiness: for the greatest happiness we enjoy on earth is from our two noblest senses of

to a Divine. lxxvi

of seeing and hearing ; had nature given us a greater latitude in this it had been liable to the inconveniences of the gross ambient air ; but where, as in Paradise, the temperature of the air was pure, and ætherial, and man in an immortal state ; the pureness of the medium seems to require a purer tegument : and if, in pureness, and subtileness, we suppose their coverings to equalize the curious texture of the eye, or ear, or both ; the immortal state, and perfect happiness, they were in, before the fall, does not, in the least, argue against such a supposition.

All

All the difference I find between the thoughts I am inclinable to embrace of Adam, in Innocence, and what is generally receiv'd, is that I can't perswade my fancy to make so great a distinction between his state, and the state of Angels; as the generality of men do: indeed, considering the great difference there is between mortality, and immortality, methinks the general opinion does not come up to the nobleness of his state: the thoughts of Paradise is too mean, when 'tis only compar'd to a garden, and the fruit thought on under the notion of what we see; the
thoughts

thoughts of that climate, where-
in the *tree of life* was planted,
and the *Deity* vouchsafed to
walk, and converse with man,
must needs be incompatible
with what these regions, where
nothing but corruption is en-
gendred, can afford.

As to the other objections,
you were pleas'd to make to
the *preface* (which was some
time ago writ, and join'd as
a *preface* to *thoughts*, which
are far from deserving the
Publick view) since they are
just, I judge it better to pass
them over, untaken notice of,
than, by a repeating of them to
do so much *injury* to *thoughts*, I
confess,

confess, I am something *fond* of; for, tho', in themselves, they may not be altogether so *clear*, yet they have prov'd *guides*, and *inlets*, to *noble*, and *Divine*, *speculations*: as being the first *directors* that put me, in the *beginning* of my *progress*, in the *true* way to pursue *nature*; plainly pointing out the *gulfs*, into which a great many learned men have *plung'd*, and, on the *road*, exhibiting *beauties* to my *fancy*, that I am not able to express.

It may be thought, by some, a mark of too great *confidence*, to rest too much assur'd of the *truth* of any thing;
let

to a Divine. lxxxi

let such *scepticks*, waver betwixt *truth*, and *ignorance*: for for my part whilst I keep within view of the *Divine* commands (or the *knowledge* that is allowable for *man* to have of the *Deity*) and find a perfect, and infallible *erection* of the truth of any thing by my *Senses*: that thing, by me, shall be proclaimed *true*: nor shall all the *Sophists* in the world perswade me to the contrary.

But again; because I know how *hard* it is to keep before my eyes the perfect *truth* (which certainly the *Scriptures*, or the word of *God*, contains)

I shall ever judge of things with *caution*, *modesty*, and *Suspicion*: enquiring always, what advantage any thought of any body may prove towards the better *Seeing*, or *understanding*, of the *Divine truth*; which always, when found, carries with it its own *evidence*.

I have so much *charity* for *mankind*, that could I describe the *thoughts* I have, whilst I consider *nature*, rightly pursued, as the chief *guide* to *virtue*, and *religion*, with the same *beauty* and *harmony*, they strike my *fancy*; I should attempt to express my self on this *subject*, at least believing it might
prove

to a Divine. lxxxiii

prove something *advantageous* to the less knowing, and happy, of them.

But I find a great deal of difference betwixt *thinking* and *expressing*, the *thought*: nor does the same *thought*, after I have endeavour'd to word it, strike my own *mind*, upon a review with half so pleasing a *motion* as what was caus'd by the *first*, immediate, stroke of *truth*, and *reason*, on the *fancy*: nay, sometimes I find by the expressions, the very *different*, and sometimes *latent* signification of words causes a quite *different motion*, even in my *self*, than what I at *first* re-

e 2 ceiv'd

ceiv'd : how far then may I be from thinking, by these expressions, to incite in a *stranger*, whose mind is no ways prepar'd, or inclinable to such a *motion* ; the same glances, of *reason* which have been only, as 'twere, reflected to my *Soul* by the *position*, or *temper*, the mind was, at that *instant*, modulated into by preceeding *thoughts*.

I dare venture to say there has not been one *vice* that I have not, at some time or other, in my pursuit of *nature*, found absolutely contrary to it; and naturally destructive of health, and happiness. And these

these thoughts have appear'd arm'd, with so much reason and evidence, that, whilst they have prevail'd in their *primitive vigour*, I could, as soon, perswade my self to consent to the *swallowing* of *poison* into my *stomach*, as suffer it to be insinuated, by other means, into my *nature* : which I certainly perswaded my self, would be the *consequence* of such *actions* ; and these *perswasions* built upon the clearest evidence.

Considering how inseparable an *union* there is betwixt the *body*, and the *mind*, it ought not, in my opinion,

to be reckon'd so great a *Paradox* to hold, or believe, the *disorders* of the first, the real, and sole *causers* of the *indispositions*, and *disorders* of the latter; since the intellectual *mind*, or *soul*, as it was breath'd by the *Deity*, is a *principle*, purely *spiritual* and not capable of *vice*, and *error*, only as it mix'd, and clog'd with the *particles* of *matter* which are form'd, for its *use*, by the *organs* of the *body*; if the *organs* be out of order, the *alloy*, *vehicle*, or *mixture*, which the *soul* receives from the *body*, must be affected likewise with the *disorders*, that are communicated

to a Divine. lxxxvi;

municated to the *alloy*; and that *vice* disorders the *body*, methinks is *plain*; by turning the regular *motion* of the *Soul* (which being the *principle* of *life* the least *error*, or *wandering* in it must affect the *life* or *health*) out of its *road*; the natural *tendency* of the *Soul* being towards *virtue*, or what is *Synonymous*, tending to force the *particles* of the *body*, with it, through such *pores*, and *canales*, as may make them most minute, and spiritual, to the end that it may not be clog'd with a *vehicle*, too *thick*, and *gross*; if any of these *conduits* be *stopp'd*, as in

a curious *fountain*, the whole device is more, or less, *im-pair'd* ; as the *canale*, or pipe, stopp'd, has greater, or less, *communication* with, or *influence* on, the whole ; and this *ferment*, and *disorder* may be caus'd, in the *spirits*, without putting the *blood* (which I account to be the *scene* of all *distempers*, as well *convulsive*, as *others*) into an immediate *disorder*, sufficient to specify a *distemper* ; because the *blood* is the prime *canale* from which the *Soul* receives its *vehicle* : and the *obstruction*, or *hindrance* of the regular *motion*, is far beneath in some small *pipe*, or *branch*,

to a Divine. LXXXIX

branch, that receives its *origine* from the *Blood*, so that tho' all the *pipes*, or *canales*, that are below this obstructed *tube*, prove mightily disordered, yet the *stream* above, by which these are supplied, finding constant *passages*, to vent its *particles* some other way, that it has prepar'd, and brought, to be received by the proper *vessels* suffers no present, or sensible *inconveniency*; tho' by degrees, the *obstruction* may prove so great as to affect the original *stream*.

Methinks our *modern age* seems convinc'd of the *truth*
of

of this ; by having, upon the least *chagreen*, melancholy, or uneasy *thoughts*, immediate recourse to a *Physitian*; who, perhaps, learnedly pronounces them disturb'd with *vapours* ; I am far from discouraging people in this case, being satisfied, that in all *disorders*, as well of the *mind*, as *body*, the *Physitian* ought to be consulted, but, in some cases, I am of opinion, a *Divines* judgment likewise ought not to be rejected.

I hope, *Sir*, what I have said may, sufficiently, satisfy you that it is not out of any
slight

flight to the judgment, or over
conceited opinion of my own
performances, that I leave un-
corrected, what you've censur'd;
and since a man can propose
to himself but one, or both,
these ends in publishing his
writing, viz. either, thereby,
thinking to benefit the world;
or gain applause to himself:
you may, justly, question
which of these ends I could
propose from the Preface:
before I conclude, therefore
I think it will be reasonable
to say something, for your
satisfaction, in that point.

I find the ingenuity of our
age inclines our young Gentle-
men

men very much to the study of natural Philosophy, and the Preface, tho' it seems to make nothing clearly out, yet it has notions, and fancies, as they are not absolutely Heterodox, may incite thoughts, in noble Geniuss's which may prove of no small advantage to themselves, and others. What better foundation can be laid to build Natural Philosophy upon than that of the Gospel? and what can prove more powerful to incline ingenious, and polite minds (which indeed may be a little staggered at the, too great, complication of mysteries and may well plead for some use

to a Divine. lciiii

use of their *reason*) to the *em-*
braces of *virtue*, and *truth*, than
such *thoughts* of themselves as
may *perswade* them their
health, and *life*, is, deeply,
concern'd in the *actions* they
were about? in short, I should
be more *ambitious* to be *instru-*
mental to so good a *work* as this;
than to be *Monarch* of the *uni-*
verse: and if it proves that I
have *advanc'd* nothing to-
wards it, I have this of the
poet to *pleasemy self withal*,
In magnis voluisse sat est.----

Reverend Sir,

Your most Oblieged and Humble Servant,

H-----

THE
CONTENTS
OF THE
CHAPTERS.

CHAP. I.

*An Introduction, Explaining what is meant
by the term Body; and what by Spirit.*
pag. 1.

CHAP. II.

Of Body and Spirit, join'd. pag. 7.

SECT. I.

Of Water, pag. 12.

SECT. II.

Of Salt. pag. 17.

SECT. III.

Of Fire. pag. 20.

Speci.

The Contents.

S E C T. IV.

Of the Moon, and Stars. pag. 28.

Of the Sun. pag. 33.

Of Congelation, or of Solid Bodies in general. pag. 36.

S E C T. VII.

Of Quicksilver, and Fluid Gold. pag. 38.

S E C T. VIII.

Of the perviousness, and transparency of glass. The clearness of Ice, and opaceness, of gold and other solid bodies. pag. 46.

S E C T. IX.

Of the brittleness, and, malleableness, of Metals; to which are premis'd some reflections on the difference, betwixt Fluidity, and Firmness. pag. 55.

S E C T. X.

Of Elasticity. pag. 70.

Seck

The Contents.

S E C T. XI.

*Of Sounds, and their propagation; with
an account of Echoes. Pag. 75.*

S E C T. XII.

Of Light, and Colours. Pag. 91.

C H A P. III.

*Of the Operation of Spirit on Body, or of Ani-
mation in general. pag. 103.*

S E C T. I.

*Of the three sorts of Chymical Spirits, viz.
vinous, acid, and urinous or animal;
with the Analogy they bear to the Spirit,
Soul, or Life, of all bodies. Pag. 103.*

S E C T. II.

*Of the Seminal, or Prolifick quality of bodies
inspired either with a sensitive, vegetative,
or rational, Soul.*

S E C T. III.

*The Soul of Brutes consider'd as it is the
cause of sensation.*

C H A P. I.

An INTRODUCTION

*Explaining what is meant by
the term Body; and what by
Spirit.*

BY *body* is understood either that
which has *dimension*, obvious
to our *senses*; or whose *parts*
are so very *minute*, that, tho we may
be sure they are parts of *matter*, yet
are they neither to be *seen*, nor *felt*;
because their *parts* are *finer*, or, at
least, as *fine* as those of the *Air*, (the
Medium in which we perceive all *sensi-
ble Objects*;) of this kind of *body*, or *sub-
stance*. *Air* it self is a *Species*, as are
also all the *Effluvia*, that continually

A

flow

flow from all bodies ; more especially from those bodies that are animated by Soul, or Spirit ; and , of those in the most profuse manner, from the bodies of hotter animals, known by the name of insensible perspiration.

Body is compos'd either of particles

I. Aqueous or incombustible

II. Oleagenous or combustible

To one, or both these heads, may be reduc'd all natural Beings of what kind soever. The particular enumeration of which belongs to the next Chapter.

Spirit, purely so call'd, there is no such (except the Deity, and all Created Beings, have an alloy of matter whose perfection consists in its refinedness from dross ; and aptness for local motion :) Spirit, or the Deity, being the Principle by which, and in which, all things move :

by

by how much *swifter* therefore the *motion*, and by how much less *clog'd* the *Spirit* ; by so much the more *noble*, and *Divine*, the *Being*.

This doctrine may be oppos'd by a notable objection : *Viz.* That *Devils*, and *Infernal Beings*, by this rule, are more *Divine* than the greatest *Saints* upon *earth*, whilst in the *body* ; because their *motion* is suppos'd to be *swifter* than that of *men* can, possibly, be, by *Natural means* : To this may be answer'd, that (*Divine Perfection* consisting in *knowledge*) every body will allow *Devils* to partake of this in a more especial manner than *Mortals*, who have been, ever since *Adam*, more *clog'd*, and confin'd, in *matter* (than any other *rational Being*) to get rid, and disengage it self, of this *clog* is the whole business of *men* : which, when accomplish'd, must certainly be attended with more commendation, by how much more he deserves, who makes a *curious*

piece of Artifice, than he that destroys one, already, made. Man is, in a manner, left to be his own Creator; for all men have, implanted in their nature, some portions of Divine fire: this they are left to move, and act by, and feed, and nourish this spark by, rightly modified, matter; (the Modification of which is, altogether, in man's power:) all flame is either more pure, or gross, according to the pureness of the matter of which it is compos'd; and the purification of all matter consists in resolving, and making minute, its parts; which parts are so resolv'd, or ground, by some quick motion. The constant, quick, and brave, motion of the Soul of man is (what we call) vertue: and vice, is drowning, or causing that motion to cease by a, cowardly, contracting, or hiding, of the Soul; not daring to let it appear to the world; lest its foulness should be conspicuous. By thus locking up the Divine operations of the soul, the

matter

matter which, in the *stomach*, is resolv'd
 into *Chyle* ; and, by the *Veins* and
Arteries, with the *blood*, is turn'd into
Spirits, fit to be joyn'd, or added to the
Animal Soul ; these *Spirits*, by the *Souls*
 contraction, (the office of the *Soul* be-
 ing, by its continual motion, to re-
 solve matter into the finest, and most
 minute, particles) are too gross to admit
 of so noble operations as *Diviner Spirits*
 are fram'd for ; and, by a continual
 succession of these grosser particles, those
 pores, which were adapted to frame pro-
 per *Spirits*, for the will, and other
 faculties of the *human Soul*, are so dila-
 ted that they quite change the nature of
 the parts ; and bring forth fruit quite
 different from what was design'd by the
 first framer of the *Organs* : as in *Vegi-*
tables, each branch has pores to strain
 the juice ; which, from the root, flows
 in a grosser substance, and fits it to
 bring forth fruit according to the Na-
 ture of the pores, through which it is
 strain'd ;

strain'd; if these pores, for want of pruning, or other neglect of the husbandman, are too much dilated, the nature of the fruit changes. The unhappiness of Devils and incorporeal Spirits (improperly so call'd) consists in that, by consciousness of their own foulness, they dare not exercise that motion which was in their power; for, by that means, they must be forc'd to throw off that clog of matter which hides their treachery, and perfidiousness. In happy Spirits every thought of the Soul is seen, at first glance; as purest water through clearest Cristal: 'tis plain that nothing is Vice but a confining the motions of the Soul; and Vertue but the exercising its motion, and getting rid of those deformities, which make it ashamed to be seen; and therefore abuses the deepest and darkest recesses in matter, foolishly thinking, there, to conceal its conscious crimes; by how much the more wicked the being

being is, that thus wou'd conceal its deformities, by so much the more anxious, consequently, must it be, to clog it self the deeper in matter to hide all its foulness.

CHAP. II.

Of Body and Spirit, join'd.

I Suppose all men will own that whatsoever has a Being is either Body, or Spirit; or, what is the same thing, is either body, or not body: for to believe that, where body is not, there is an absolute Vacuum inane, is, to me, absurd: tho' some, perhaps, for Argument sake, may seem to maintain it. To satisfy such persons, I beg leave a little to argue the point, and consider what sort of apprehensions we can have of those things which are not bodies;

no other thought of them can be conceiv'd than that they are space, or places, fit to receive Bodies into; if so, they have what Philosophers call UBI, or some Existing place, and consequently must be occupied by Spirit, at least the Divine Spirit, whose most noble attribute is Ubiquity or Existence in every place.

If this be granted (as I think no reasonable person can deny; for all Philosophers have held a Universal Spirit, or Anima Mundi) it will follow that, dull, unmoveable matter being, at any time, plac'd in this space, must, necessarily, have its parts operated on, and put into motion by this nimble Spirit; whose whole perfection lyes in its continual motion.

The Universe has always been represented, to mens fancies, by a vast, immense space in which are interspers'd lumps, or heaps, of matter: tis plain, from what has been suppos'd, that
this

this space, or Spirit, or *Æther* (term it what you will) being endued with so quick a motion (motion being the only apprehensions we are able to have of Spirit) must operate, and move, with it, the parts of matter ; and, consequently, heat, dissolve, or melt it ; for heat is only the moving the parts of body and its degrees are greater, or less (according to the greater, or less degree of swiftness in the motion :) as, its opposite quality, Cold is a cessation, in some wise, of that motion ; one body seeming cold in respect of another, as its parts are less agitated than those of another.

Supposing then, according to my former Principle, a rude, and indigested heap of matter (such as the CHAOS of this Earth may be suppos'd to have been ;) consisting, indiscriminately, of two sorts of particles, *Aqueous* and *Oleagenous* : but so that the *Oleagenous* parts may be suppos'd to be lock'd up in the

the *Aqueous*; this plac'd in such a space, or *spirit*, as has been describ'd; the consequence will be, that when matter is so finely resolv'd as to be kept in a continual motion by *Æther* (for so I would term what I mean by *Universal Spirit* or *Anima Mundi*) it must be so incorporated with it, as to compose, what we call, *fluid bodies*; which, in particular, may be thus defin'd.

Air is a *fluid body* consisting of the *Aqueous* particles of matter; resolv'd, bore up, and kept in a continual motion by *Æther*. *Æther* is a *fluid body* consisting of the most *subtile* particles of matter, very *spiritual*, *preying*, and *hungry*, uniting, as well, with the *oleagenous*, or *combustible*, parts of matter, as with the *aqueous*; but, when clog'd with either, will not admit the other: when 'tis joyned with the *Oleagenous* parts of matter, 'tis called *Fire*; when with the *aqueous* parts, 'tis call'd *Air*, or *Water*: and when it *departs*, or *recedes*

cedes from any body it leaves the body solid, and without motion. This notion will be better understood from this plain parallel.

Æther, which is much more subtil than flame, (for flame is a qualifying or clogging of *Æther* by the oleagenous parts of matter mix'd with it; tho, at the same time, with this different property; that *Æther* will admit, and joyn, with the aqueous particles of matter; and flame will not: for, in flame, the *Æther* is, already, clog'd with the oleagenous parts of Matter.)

Æther, I say, may be represented by highly rectified Spirit of Wine; which is a fluid, whose parts are in the greatest motion, of any body, that can be contain'd for our use; and *Æther*, or Spirit, can be distinguished, by no other property, than the swiftness of its motion. The word Body (or this terrestrial Globe upon which *Æther* operates) may fitly be compar'd to an Almond,

or

or other *Nut*; consisting both of *aqueous*, and *oleagenous*, parts; placing this *Nut* (compar'd to the *Mass* we vulgarly call *earth*) in high rectify'd *Spirit* of *wine* (compar'd to *Æther* or the *Menstruum* that *earth* is dissolv'd in) it will follow, that the *Aqueous* parts will be first operated on, and dissolv'd by the quick motion of the *Spirit* of *Wine*; and (if the *aqueous* particles prove sufficient to clog, or stay the pressing edge of the *Spirit*) the *oleagenous*, or *oily*, parts will remain undissolv'd: if the *watry* parts prove not sufficient to glut the *Spirit*; some, or all, of the *oleagenous* parts, will, likewise, be dissolv'd. This will further be explain'd under the title of *Fire*.

SECT. I.

OF WATER.

AS, in the former comparison, *Spirit* of *wine* (being clog'd by the particles of the *Nut*, or any other
body

body) will (its body being weakned by the addition of a fluid, whose parts are in less motion, as those of common fountain water) let go its hold and let the, formerly dissolv'd, body, which was incorporated with the spirit of wine, now sink to the bottom of the glass which contains it; [this Chimists call precipitation:] so the *Æther* (to which the Spirit of wine bears an Analogy) being clog'd with the aqueous parts of matter, which before swam, and were born, on its wings in the form of Air, (the spring of the *Æther*, being weaken'd by the intermission of some part of the Atmosphere, of some other Planet,) gathers it self, first, into clouds, and flows on the top; till, by its own weight, it, at last, settles, and falls down in showers of water; in which so much of the *Æther* remains, as is able to keep the parts of water fluid, or in motion; or it is congeal'd by the departure of *Æther*, being employ'd another

ther way; and then the whole *Air* is affected by its *unactiveness*: and every body, whose *parts* are in *motion*, undergoes some sensible let, or *obstacle*, to its *motion*; the perception of which is termed *cold*; and the congeal'd, or *immov'd*, particles of *Air* that thus, unfriendly, disturb the motions of their neighbouring *Bodies*, are call'd *Snow*, or *Hail*, when they fall to the *earth*: if they are too small, and light, to sink to the *bottom* of *Air*, but flow in it (as the particles of dissolv'd *sugar* in *water*,) 'tis then call'd *Frost*; and its *sediment*, which it casts from it, *Hoar*: which, to appearance, resembles *Snow*. A notable comparison of this may be observ'd in what *Chymists* call *Lac*, or *magisterium Sulphuris*; *milk*, or *magistry* of *Sulphur*: the *Sulphur* (being dissolv'd in *water* by *boyling* with *Salt* of *Tartar*, or *Quicklime*, which are call'd *Lixivate Salts*) affords a liquor very red; the smell, and taste, denoting it

to abound with very many of the dissolv'd particles of the Sulphur: to this liquor, adding a sufficient quantity of Spirit of Vinegar, or any other acid, whose particles may lay hold on the particles of the lixivate salt, which kept the water in sufficient motion, enough to hold up, or bear, the dissolv'd particles of Sulphur (for the moving of the parts of a fluid is what gives it a greater, or less, propensity to dissolve, and bear up, matter; incorporating it with its own body: such are Tinctures, of all sorts, by the highest rectified Spirit, or Alcohol, of wine which has its parts in the swiftest motion of any body perceptible to us: for a body, whose parts are more in motion, would be equally, or less, thin, than Air (the Medium by which we see, and judge, of all things) and, consequently, not perceptible the acid particles having arrested the parts of the lixivate Salt, which gave motion to the water to bear up

up the dissolv'd particles of the Sulphur, which the heat of the fire had resolv'd, the particles of the Sulphur gather themselves in white clouds towards the surface of the Liquor ; and, being too heavy, long, to continue there, it fleets about, (as clouds on Air) until by its own weight 'tis subsided into a white powder : This only difference happens in the comparison, that clouds, swimming on Air, fall down, sometimes, in a fluid body, whose parts are kept, in a continual motion, within themselves, viz. water ; the cause of which is, because Æther, continually, receiving a supply of new Aqueous parts from the earth which compose the Air, must, of necessity, thrust upwards more than the Æther can mix, or incorporate, with its body without too much locking, or binding up, its motion ; therefore it casts it off : but in this expurgation the exploded parts lay hold of as much of the Æther as will suffice to keep them in

continual motion : and , in this form state, the body water which is the simplest fluid ; and (its parts being the grossest for want of having suffer'd some greater motion) the heaviest of all fluids *Per Se*. If, at any time (from any part of water) the *Æther*, or motion, depart ; the water is left motionless, and congeal'd.

S E C T. II.

Of SALT.

SAlt is compos'd of the heavier parts of aqueous particles engender'd, and receiving a peculiar disposition from the Air, in which it flow'd, and of which it was part, thrown off from the water ; and together with it falls to the earth : where, congeal'd by the departure of *Æther*, which,
 B before,

before, kept its parts in motion (con-
gelation, or glacination, being nothing
but cessation of motion, as Mr. Boyl,
experimentally, proves, in his *History*
of cold) it appears a dead, solid, body;
tho easily (it having been once dis-
solv'd) made fluid: and unitable
with, almost any fluid.

It may not here seem impertinent
to add an observable, and known, ef-
fect of common Salt when joyn'd
with Snow, or ground ice, freezing wa-
ther, and other liquors, in a very
short space; Salt Armoniack dissolving
in common water, as Mr. Boyl ob-
serves, has the same effect; the rea-
son, according to our Hypothesis,
must be this: *Viz.* that any motion-
less, or solid, body entring into a State
of fluidity, must receive Æther from
its neighbouring fluids; whether Air,
or Water: now if water be at one
side of the glass, whilst the Snow and
Salt are dispersing on the other; the
motion,

motion, which the *Snow* and *Salt* together endeavour to obtain, causes the *Æther*, which before kept the parts of the *water* in *motion*, to quit that, and joyn with bodies which seem to have more immediate need of its assistance. It is evident that, before *Snow* and *Salt* can obtain a fluid form, they must receive their *Æther*, or *motion* from some body that has it: which must either be from *fire*, *air*, or *water*: for *Æther*, purely of it self, has no substance, or cohabitation with terrestrial bodies: if *fire*, and *air*, be removed, at a greater distance, from the *Snow*, and *Salt*, (dissolving themselves in a fluid body) than *water*; 'tis rational to believe that the *Snow*, and *Salt*, must receive their fluidity from *Water*. The like effect happens to the *Air*: the parts of which may be observ'd to stick upon the outside of the glass; containing *snow*, and *ice* in perfect streaks of *ice*.

S E C T. III. Of FIRE.

Fire is a body whose *motion* excels any other *motion*, perceptable by *Human sence*; and is compos'd of the lighter parts of *matter* joyn'd with *Æther*: Viz. *oleagenous* (for the oily parts of *matter* are lighter than the *aqueous*; as appears by their swimming on *water*.) This may be prov'd from its *production*, at what time soever the *watry* parts can be separated from the *Oleagenous*; and, at the same time, the *Oily* parts of *matter* being resolv'd into sufficiently *minute particles*, to be laid hold of by *Æther*; in that quick *separation*, *fire* will thence *ensue*; as is seen in the *concussion* of great *bodies*: where, by the *violence* of their *meeting*, the

aqueous

aqueous particles, suddenly, recede ;
 and some parts of the struck body is,
 at the same time, resolv'd ; thence
 sparks of fire emanate. The same hap-
 pens when steel, and flint are struck
 together. Fire once thus produc'd,
 will submit as long as 'tis supply'd
 by the Oily parts of matter ; for tho
 Æther will mix either with the oily,
 or watry, parts of matter ; yet when
 it is joyn'd to the one, it refuses to
 admit or incorporate with the other :
 and the Aqueous parts, being so dis-
 pos'd by the Creator, are first laid hold
 on by Æther : nevertheless Æther
 seems to have a much nearer affinity,
 and greater inclination to joyn with
 Oily parts of matter ; than the watry :
 because the first (as being lighter
 than the latter and more easily
 mov'd) comes nearer its own nature :
 therefore wheresoever Æther is joyn'd
 once with the oily parts of matter,
 and there finds a supply of Oily or
 combustible parts, it drives, power-
 fully,

fully, away from it all *aqueous* parts ; as being, absolutely, *heterogeneous* to its substance : and receives no parts but such as are *homogeneous*, and will unite with it.

With how much *Violence* it opposes, and drives away from it, the *aqueous* parts of matter ; the noise, and commotion it makes, in the *ambient air*, demonstrates : and the more, by how much the matter, it feeds upon, is fitted and adapted, to its *suddain reception* : So *Sulphur*, and *Nitre* (commonly call'd *Gunpowder*) joyned, by its *suddain resolution*, causes that surprizing noise to the amazement of any not aware of such effects.

Lightning, and *Thunder* proceed from the same Causes ; as, in the former comparison, the *Nut* in the *Spirit of Wine* ; in defect of *aqueous* particles, enough to satiate the eagerness of the *Spirit*, some of the oily parts are also resolv'd by the *Spirit* ; so that the *Aether* (having

(having absorb'd great part of the *Aqueous* particles that it meets with, on the *Surface* of the *earth*) must then employ it's force on the *oily* parts; which it also resolves: the *Oily*, being lighter than the *watry*, mount uppermost; where, at last, getting head, and uniting among themselves (as *Oyl*, tho' ever so dispers'd in *water*, will, at last, all unite in its own body; and *Swim* uppermost:) flow on the *clouds* until, by the violent meeting of *vapours*, the *watry* parts, that they flow'd in, are suddenly bearen away, and give room for the *Æther* to to lay hold on the *Oily* parts of matter; which it resolves, with all quickness; and appears, in *flashes* of *lightning*, before the *thunder* is heard: because *objects* move much *flower* to our *Ears* than *Eyes* (as in the firing of a *Cannon* the *fire* may be perceiv'd some time before the *noise* is heard.

And, as has been hinted, that by how much the more *subtile* the *oily*

matter is, that joyns with the *Æther* in composing *fire* ; by so much the more *subtile* the *fire*. Nothing therefore can be suppos'd to have its parts more *refin'd* than that *matter* that has been *absorbed* by *Æther* ; and carry'd into *Air*. *Sulphur* and *Nitre* receive their *wonderful disposition* (so suddainly to be resolv'd by *Æther*) from no other principle than having been *fluid bodys* ; and joyn'd with *Æther* : tho, by reason of some *allay* of *watry parts*, their *Substance* was never resolv'd into *fire* : but on the contrarywise, by the departure of *Æther*, they are left *solid bodies* ; abounding, so much, with *Only particles* ; that they are, suddainly, *inkindled* by the least assistance of a *Medium* of *fire*.

This may, in some measure, remove the *surprize* men are wont to have at the effect of *Lightning* above other *fire* ; and, particularly, that *wonderful effect* of melting metals, *keys*, *mony*

mony, &c. in the pockets of some that have, miserably, perished by it, without damaging the cloaths they wore : and melting their swords in their scabbards ; without consuming their scabbards.

As for the vulgar opinion of thunderbolts there is no ground for it ; except the fancies of some ignorant people : and any one that has observ'd how great a motion the Air is put into, when a great Gun is fir'd (the Shock of which goes near to overturn the by-standers) will not wonder at the effects of thunder in throwing down houses, and trees, &c. only by the suddain and violent, motion the Air is put into by the meeting and concussion of two or more Vapours ; since winds alone have been able to effect so much.

But here may be objected ; that if it were only a motion of the Air, why does it not in effect bear a greater Latitude than is observ'd ? for relations, of this kind, intimate the ruins, sometimes,

times, to appear no greater than if a single Cannon Bullet had pass'd through them: this objection will be answer'd, if it be suppos'd that the ruin happens, at the same instant, with the flash of Lightning; and that it does not wait the leisure of the noise, which is, vulgarly, call'd Thunder: consequently the ruin can be no greater than the separation of the aqueous parts, in which the lightning flows. The suddain, and unusual, separation of the Air, is what destroys bodies before us'd to calmer motions. It may, again, be objected that if the only parts of matter are lodg'd in the upper region of the Air, and there fired; how is it possible for fire, which is a lighter body than Air, to descend upon these lower borders, as if only, spitefully, inclin'd to ruin, it should even, to accomplish its purpose, pervert the laws and rules of nature? to this great objection I return this answer, viz: That if in water, or any fluid, there

there be suddainly taken away, or separated from it, part; the whole fluid, according to the surprize of this motion, will be more, or less nimbly agitated. The same happens to the Air: for some part of it's body joyning and leaving, all of a suddain, its station; the Air that is, in a direct line, under this separation, will, immediately, at the departure of any body that press'd it down, and kept it in its place, fly upwards to cause an *Equilibrium*; which all fluids require: consequently this motion must be succeeded by another motion of the *Lateral Air*, or that which is on every side of it; which, immediately, jumps into its place: therefore from the flying upwards of a certain colume of Air, and the motion that the lateral Air causes by jumping into its place, I suppose the effect of *Thunder* to proceed.

S E C T. IV.

Of the Moon, and Stars.

THE Moon is a body consisting of *Aqueous*, and *Oleagenous*, particles ; as the *Earth*, whose *Atmosphere* is contiguous to that of the *Earth* : and, being a purer Medium, attracts that part of the *Atmosphere* of the *Earth*, which in its motion interferes with the *Atmosphere* of the *Moon* ; and, thereby, causing the *ebbing* and *flowing* of the *Sea* ; and *Winds*, of all kinds, which must, of necessity, follow the motion the *Air* is put into by the attraction of the *Moon* : for if any part of a fluid body be attracted, or put into Motion, the whole fluid must flow to that point to make an *Æquilibrium* (which causes wind, and the Motion of the *Sea*) is plain from the doctrine of *Hydrostaticks* : for if the pressure of the
Atmosphere,

Atmosphere, which presses on every part of the *Surface*, of the *water* with an equal weight, be lessened, in any one point; (as it is by the *Attraction* of the *Moon*) the *water* must, from every part, flow, from that point, to make an *Æquilibrium*. This attraction, from the *Atmosphere*, of the *moon*, is caus'd because the *moon* may be suppos'd to be of a different substance; and have an *Atmosphere*, specifically, lighter than the *Atmosphere* of the *earth*; and the *Æther*, which has dissolved some of its Substance into an *Atmosphere* of *Air* which is about its body (as our *Air*, surrounds us) may not be so clog'd with the parts of its own body; but that it may be capacitated to receive, and keep in motion, some particles of the *Atmosphere* of the *earth*: and, by this means, receive some parts of another, and differing, body and mix and joyn it with its own: as *water*, tho' clog'd and glutted with common *Salt*, inso-

much

much that it will, by no means, dissolve any more, it, notwithstanding, will dissolve Sugar, and other Salts of differing particles.

But here may be objected, that the *Atmosphere* of this *Earth* may as well be supposed to receive some of the parts of the *Atmosphere* of the *Moon*. To this I answer, that, if that were supposed, no absurdity would follow; but it may, as well be supposed not: or, if at all, but in a very small quantity, in comparison of the *moon*; for the particles, that compose the *atmosphere* of the *moon*, may (rationally enough) be supposed to be more refined, and consequently lighter, than those that compose this *Air* we breath in. If then *water*, which may resemble this *Air*, and, a lighter fluid, as *Oyl*, resemble the *Air*, or *Atmosphere*, that surrounds the *moon*, meet: if *water*, I say, meet with, or be poured on, the *Surface* of *Oyl*; it will, immediately

mediately, sink in the Oyl, and mix with it ; tho not incorporate : but the same will not follow, if Oyl be poured on the Surface of water : for the Oyl, being the lighter fluid, will not sink, but swim on the top ; and so can neither mix, nor incorporate, with the water.

The Application is evident, viz, that the particles of the air, we breath in, may, when they meet with the Atmosphere of the moon, be absorb'd, by sinking in that lighter Medium : yet the same will not, reciprocally, follow, when the Atmosphere of the moon meets with the surface of the Air ; it cannot be absorb'd, by the Air, because it is a lighter fluid : and cannot sink in it.

The same may be said of all other Planets whose Atmosphere are all contiguous one to another : a Scheme of which would be foreign, from my purpose, here to insert. Nor does my allowing each to have an atmosphere, (whose particles may be very much different

ferent in quantity, and form, from those of the earth, as well as of each other) contradict (what I would affirm) that they have all *Atmospheres*: as the air consisting of the *aqueous parts* of matter, dissolv'd and kept in a continual motion by *Æther*. For by asserting that this *Air* consists of the *aqueous parts* of matter, I do not confine my self, so close, to that principle, as to deny an allay of *oily particles*, to insinuate themselves, in some seasons; as, particularly, in *Summer*; the Explanation of *Lightning* and *Thunder* intimating thus much: consequently an allay of *oily particles*, in a more, or less, degree (as the *Atmosphere* is of a purer nature,) I must ascribe to each of the *Planets*: and, the more they have of this allay, the purer is the *Atmosphere*. But I must suppose the basis of all the *Planets* (except the *Sun*) to be compos'd of *aqueous particles*; otherwise it would be fire: and consequently, so resolving,

ving, that few, or no *body*, could endure its *operations*.

Of the S U N.

THE *Sun* is a *body* consisting either, intirely, of *Oleaginous particles*, ; or, if it admit of *aqueous*, 'tis but as our *Air* admits of *oleaginous*, as it were by *stealth* ; to qualifie the, too violent, disposition of its antagonist. Thus far I will not altogether, abstract *aqueous particles* from the *body* of the *Sun* ; to temper its, too swift, motion : which might be *pernicious* to adjacent *bodies*. This will explain the effects that are observ'd to proceed from the *Sun* : how it causes *heat*, and how (by the help of *glasses*, and other *instruments*) *fire*, by this means, will seem no *mystery* : it will not be unreasonable again to repeat the nature of *heat* to be nothing

C

but

but motion; and motion being locked up by too great a clog; of matter it's contrary quality [Cold] to ensue. The nature then of the Sun (the motion of whose Atmosphere cannot be so well check'd by the only parts of matter as the same Æther is in the Atmosphere of the earth, and other planets, by the aqueous) differs from that of other planets; in the pureness of its Atmosphere, and swiftness of its motion: and, by that means, engrosses to it self a greater space, or Atmosphere; by how much the easier the same Æther can keep up, or in motion, the lighter particles of Oleaginous matter; than it can the heavier parts of aqueous bodies: and, by its large extent, obtains a vicinity, or contiguity, with all the planets. In which number, if Earth may, very well, be included (according to some philosophers who have judg'd the Earth to be a planet) it must, therefore, by its contiguity, attract, or (as has been

been argued before) some of the heavier parts of aqueous matter must, sinking, be absorb'd by the lighter parts of the Sun's Atmosphere: which (if it so happens that the Air has before been clear, and not over-clog'd with aqueous particles) must cause every intense motion of those aqueous parts, that remain in the Air; and, consequently, heat, if the Air has been overcharg'd with aqueous particles; and that they have cast themselves off into clouds. These clouds supply the rarified Atmosphere; and qualify the intenseness of the heat: as also do the north winds which bring the congeal'd particles of matter from those parts of the Earth; to which the Sun is very remote: and the Sun, so seldom, comes near those regions that the motion of the air, there, is exceeding slow.

Of Congelation, or of Solid Bodies in general.

ALL Minerals, and other bodies, before they become solid, have their particles prepar'd, and made minute, by fluidity: Which fluidity is nothing else but the particles of dispos'd matter, being dissolv'd by *Æther*, and too heavy to mount into *Air*, lay hold, notwithstanding, of a sufficient quantity of *Æther* to keep their parts in a continual motion; and thus flow, so long, till the particles, by reason of their extreame minuteness, or other disposition, no longer suffer the continual Succession of *Æther*; which, in all fluids, is required, and, consequently, the innate *Æther*, not being sufficient to keep its parts in motion, suffers them to congeal into an unactive solid. The particles of all baser minerals

als adhere to the *parts* of *water*, which introduce themselves thereby through the *Bowels* of the *Earth*: and, according to some *disposition* in the *earth*, either a former *Rendezvous* of such *particles* (by the *conformity* of whose *parts* they are laid hold on, or that the *water*, in which they flow'd is no longer able to bear them; by these, or some other *dispositions*, they are left *unactive parts*: and the *continual intercourse* of *water*, laden with the same *Cargo's*, afford them *opportunity* to seize, and lay hold of, *particles* of their own *nature*. For, as *Iron*, (and all *solid bodies*) does cause a, *sensible coldness* to any body whose *parts* are in a greater *motion* than its own: consequently if there be such an *endeavour*, in these *bodies*, to stop, or seize on, the *motion* of the warmer *parts* of *animals*, which its *coldness* indicates (*cold* being only the *cessation* of *motion*) this *endeavour* must also have some *effects* on the *parts* of *insensible*

sible bodies : whose parts are likewise in a motion; (tho not so brisk:) and, by this means, stagnate them (as they are diversly dispos'd) into Salt, Vitriol, Nitre, Sulphur, Lead, Tin, Iron, &c.

S E C T. VII.

Of Quicksilver, and Fluid Gold.

THE particles of mettals being made solid, scarce content themselves with the sluggish form nature has allotted them: but by a fresh ingress of Æther, (receiv'd from some neighbouring fluid which, first, resolves, and makes its parts very small; and then, lovingly, affords it part, sometimes all, it's motion) continually, into their parts, are, again, dissolv'd; (this is plain from the fluidity, all mettals receive from fire; which is much grosser than

than *Æther*; being *Æther* joynt'd with the Oly parts of matter) and, as it were, again purify, and refine, themselves from their dross, (or those parts which were not made minute enough to associate, or flow, along with them) which they leave behind; in order to afford more pure, or minute, particles from the purest bodies: and, while these particles keep the *Æther* there receiv'd, and admit fresh supplies of *Æther* to be introduc'd betwixt its parts, they continue fluid: for, otherwise, as in mettals, melted in fire, upon the departure of the fire, which kept them fluid, they acquire a solidity; so if quick silver, and other fluid minerals were not supply'd by a continually ingress of *Æther*, their fluidity must, of necessity, cease; because all minerals, lighter than Mercury, may, probably enough, be suppos'd to be engendred, from the mixture of the metalline particles; which in small chanel's, flow with the water, and is laid hold

of by the *Mercury*: in which conflict they fix one another. Gold, that is heavier than *Mercury*, ought to have another, and heavier, fluid principle, than *Mercury*, ascrib'd to it: whose specifick gravity should, at least, balance, if not exceed, the specifick gravity of Gold; to believe that in some of the secret recesses of nature (tho' she may, all this while, have nourish'd this living fœtus within her own bowels so as never, yet, to have produc'd so pretty a Spectacle to the World) there may be such a *Mercury*, or $\psi\delta\epsilon\alpha\chi\rho\upsilon\sigma\Theta$, that may have notable difference from the common *Mercury*, $\psi\delta\epsilon\alpha\rho\varsigma\upsilon\sigma\Theta$, to me, seems ingenious enough. Something, of this nature, seems to have been found by a curious English Gentleman; who, giving an account, unto the Royal Society, of his Voyage to Mexico, and of the minerals of that Kingdom, relates a circumstance, worth taking notice of, in this place. "I was once (says he) de-
fired

“ fired to visit a famous cave
 “ there some Leagues from
 “ Mexico, on the North-
 “ west side of the City, be-
 “ yond the Lake ; this was said to be
 “ gilded all over with a sort of Leaf-
 “ Gold which had deluded many Spa-
 “ niards with its promising colour ;
 “ they never having been able to reduce
 “ it into a body, neither by Quick-silver
 “ nor Fusion ; tho’ the fame ran that
 “ the Antient Indians knew how to
 “ make use of it : and that the great
 “ Montezuma had borrow’d, thence, a
 “ considerable part of his treasure. I
 “ rid thither one morning taking with
 “ me one Indian only for my guide,
 “ with a tinder-box, and a candle, and
 “ some other Instruments for my de-
 “ sign. I found it situated somewhat
 “ high, in a place very convenient for
 “ generation of mettals ; but the mouth
 “ so barricaded with stones, that both
 “ my Indian, and I, had work enough
 to

*Transact of
 the Royal
 Society. 41.
 numb.p.818.*

“ to clear the *passage* for my *entrance*;
 “ which being open'd, I went in with
 “ my *candle* lighted, but could not
 “ make the *Indian* follow me: being
 “ afraid of *Spirits* and *Hobgoblins*. The
 “ light of the *candle* soon discovered
 “ to me, on all sides, but especially
 “ above my head, a glittering *Canopy*,
 “ of the said *Mineral* leaves, at which,
 “ I, greedily, stretching forth my hand,
 “ to reach some *parcels* of it, there
 “ fell down, presently, so great a
 “ lump of clotted *Sand*, on my *Head*
 “ and *Shoulders*, that it not only put
 “ out my *candle*, but my *Eyes* also;
 “ and calling out, with a loud voice,
 “ to my *Indian*, who remain'd at the
 “ mouth of the *entry*, there rebounded
 “ within those hallow *caverns* such
 “ *thundering*, and redoubled *Eccho's*,
 “ that I admir'd it: and the *Indian*
 “ imagining, by those tumultuous
 “ *Voices*, that I was *wrestling* with some
 “ *infernal Ghosts*, soon quitted his sta-
 tion;

" tion ; and, thereby, left a free pas-
 " sage for some rays of light to enter,
 " and serve me for a better Guide : my
 " light, mean while, being, not a
 " little endanger'd by the corrosive Acri-
 " mony of that mineral dust. Having
 " got my candle lighted again ; I pro-
 " ceeded in the cave : and heaped to-
 " gether a quantity of the Mineral mix'd
 " with Sand : and scraped also, from
 " the Superficies of the earth, a quan-
 " tity of the same kind of Glittering
 " leaves none of which exceed the
 " breadth of a mans nail ; and, with
 " the least handling, they divide them-
 " selves into many lesser spangles : as
 " with a little rubbing they leave ones
 " hand all gilded over like gold.

" I knew well enough that the or-
 " dinary tryals made by the Indians,
 " had proved fruitless upon this Mi-
 " neral ; for it could neither be reduc'd
 " into a massy form by the violence of
 " fire ; nor separated from its Hetero-
 geneous

“ *geneous Substances* by the mild tryal
 “ of *Quick Silver*, yet on the *Touch-*
 “ *stone* it equaliz’d the most refined
 “ *gold*: so that there wanted nothing
 “ but to reduce it to a *fusible mallea-*
 “ *ble Mettallick form*; which, soon,
 “ would be accomplish’d if it could
 “ be made to take *Quick-silver*.

What may be *infer’d* from this *re-*
lation, I am not about, now, to *en-*
quire: my *business*, at present, being
 only to *insinuate* a *probability* of the be-
 ing of some *fluid body*; whose *specifick*
gravity shall exceed *quick-silver*: which
 will seem, to an *unprejudic’d person*, the
 more *reasonable*, if he considers that even
 in *quick-silver*, it self, according to the
climate it was *nourish’d* in, and accord-
 ing to its *refinedness* from *dross*, there
 is some remarkable *difference* in *speci-*
fick gravity.

And, that the, foremention’d, *gilt*
leaf, had been a *fluid*, whose *specifick*
gravity did excel the *specifick gravity* of
quick-

quick-silver, seems to be concludable from its equalizing, on the *touchstone*, the most refin'd gold : for whatsoever affection, or disposition, gold shews by discovering its sympathy, or antipathy, to any body, above Silver, or other, lighter, minerals ; can be attributed to no other quality than its specifick gravity (or having fewer, and less pores.)

In fine, the whole description seems to intimate, that this strange mineral can be nothing else than a yellow Mercury, kill'd (as we usually term *quick-silver* when its parts, by straining through leather, or otherwise, are so separated, that its particles lose the connexion, they had with one another, by the mediation of *Æther* : by whose absence, Air, in the kill'd *quick-silver*, insinuates it self between its particles) by the interposition of some Sulphurs, or oily, particles, joyn'd with the Air ; however, it were to be wish'd, that the tryals made upon it had been more satisfactory ; and that

that instead of trying, to make it fusible, they had endeavour'd, by distillation, or other means, to have reduc'd it to a fluid form.

S E C T. VIII.

Of the perviousness, and transparency of glass. The clearness of Ice, and opaceness of gold and other solid bodies.

ANY body, that receives fluidity, or motion, acquires that state by the ingress of *Æther*; to which end it robs, or deprives, some other body of either part, or all, its motion (or *Æther*;) to put it self in a capacity to be rank'd amongst the superior order of fluid bodies. As a bowl that's struck, or put into motion, by another bowl, which

which receiv'd its *motion* from the hand of a bowler ; by how much *motion* it receives, by so much less *motion* does it leave in that, from which it received its *motion*. Every *body*, that has obtain'd a *state* of *fluidity*, or *motion* has received this *motion* by robbing one of these three bodies, *water* (under which head I include all *liquids*) *air*, or *fire*. The *materials* that form all *diaphanous* bodies, that are not liable to be destroyed by the *motion* of the *Air*, receive a *fluidity* from *fire* : which *state* of *fluidity* (to make very transparent *glass*, and free from *bubbles*) must be so long, and the *motion* so great, that every *particle* of the *matter*, of which *glass* is made, be reduc'd, by its constant circulating with *fire*, to almost, as great a degree of *minuteness* as the *particles* of *fire* themselves.

And tho' this *matter*, in this degree of *fluidity*, and *minuteness*, should be remov'd from the *fire*, the *parts* indeed,

deed, contiguous to the *Air*, would find themselves oblig'd to part from their connexion, with the particles of fire; but those parts that were more remote, from this assault, and skreen'd, as it were, from the violence of their adversary, by the superficies of their neighbouring, and exterior particles, lay hold on, and embrace, the particles of fire, which the *Air* endeavours to rob them of, with so much eagerness, that notwithstanding the efforts of its enemy, it keeps, and locks up, within its body, some of the particles of fire, to which, by its long union, it had, almost, assimilated its parts. Thus do the particles of the fluid materials that compose glass, upon their parting with the particles of fire, that kept them in continual motion, separate themselves into infinite numbers of small bubbles, whose cavities are fill'd with imprison'd particles of fire; mix'd with the most minute, or fine particles of the matter, with which

which they were *incorporated*; and together, in their little *cells*, or *prisons*, keep themselves in a *fluid state*; and, continually, dance round their *bounds*.

The like happens to *water*, when its neighbouring *Air* (being it self *assaulted*, and *robbed*, of some of its *motion*, by the congeal'd *particles* of *matter*, that *fleet* in it) takes from it its *fluidity*, or *motion*, to supply, or make up, its own *loss* of *motion*: for the *air* makes its first *assault* on the outer *superficies* of the *water*, which is adjacent to it; and, by degrees, *insinuates* it self further, till all the *motion*, or *Æther*, which the *Air* has not robbed it of (for it never can deprive it of all) be confin'd, with some of the finest of the watry *parts* of *matter*, in little *cells*, or *bubbles*, where they keep, and retain, their own *fluidity* within their own limited *spheres* of *activity*.

*Vid. Mr. Boyle's
History of Gold;
Title the IX. con-
cerning Bubbles.*

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These little *Atmospheres* of *Æther*, (which are clog'd in congeal'd water, or ice, with sufficient *aqueous particles*, to keep, and contain them within the *bubbles*) cause the congeal'd water to expand it self; and occupy more space than the water did before *congelation*; because the *aerial matter* (tho' lighter than *Air*, yet may be compar'd to it; both being an *union* of *Æther*, with the *aqueous parts* of matter) is much lighter than the same bulk of water; and, consequently, occupying the space that water was, before, in, must force the water further out, and cause it to occupy more space in its state of *glaciation*, than it took up in its state of *fluidity*.

This is consonant to some experiments made by Mr. Boyle in his *History of Cold*: under the Title concerning the expansion of water, and aqueous *Liquors*, by freezing.

Vid. Mr. Boyle's
History of Cold, p. 86.

One experiment is, that having set a bolt head, with a long slender shank, or stem, in a mixture of ice, or snow, and salt, so that it may begin to freeze at the bottom of the glass; (to avoid the inconveniences that might happen, by the water's, first, freezing at the top; for then the expanding of the water must either break the glass, or force the ice, that is on the surface of the water, farther up) the ice did reach a good way higher in the neck, or stem, than the fluid water had done before; and upon thawing, the water did fall, and rest, at the part of the stem, where its surface touch'd, before it was expos'd to be frozen.

This causes the clearness that is to be observ'd in ice, and its resemblance to glass, or crystal; tho' the little bubbles in ice are fill'd with an aerial substance, too gross to be equally pervious with either of them: for in many tryals, I cou'd never find a fleak of

ice, tho' ever so *thin*, and *clear*, that was *diaphanous* enough to suffer the largest *print* to be read on the back-side of it.

But the little *bubbles* which are innumera-
bly *interspers'd* in *glass*, are fill'd with a quite *different matter*; which has a great and near *affinity* to the *particles* of *light*; being *Æther*, joyn'd with the *oleagenous parts* of *matter*, (for when *glass* was in its *fluid state*, it can't be suppos'd that any *aqueous particles* were admitted near it) and consequently suffers *light*, which is also an *union* of the finest of *oleagenous particles*, with *Æther*, to have free *ingress*, and *regress*; the pores, all this while, of the *glass*, being too close to suffer any *aqueous particles* to interpose, or enter, into the *glass*, to veil the *object* which appears on the other side of the *glass*: for *bodies* are *opa-cous* upon no other account than that they interpose, between the *eye*, and the

the *object*, *particles* more *gross* than those of the *air*, in which the *object* is perceiv'd ; and no *object* can be perceiv'd that has *particles* more minute than the *air* : but the *particles* of *glass* were, in the *state* of *fluidity* they receiv'd from the *fire*, every one of them, reduc'd, almost as small as the *particles* of *air* ; and the *fluid medium*, that is contain'd in the *bubbles* of *glass*, when it is congeal'd, has its *parts* much more *minute* than either the *particles* of *air*, or *fire* ; so that the *minuteness* of these *particles* make sufficient amends, for the *difference* that is, in *bigness*, between the *particles* of *matter*, of which the *glass* was made, and the *air*, in which it is perceiv'd ; for, in looking upon it, the *particles* which are, indeed, more *gross* than *air*, by being reflected on by a *medium* that is extreamly more *minute*, seem, to the *eye*, to be more *minute* themselves than *air* ; so that when *glass* interpo-

ses betwixt the object, and the eye, it, very little, shades, or darkens, the object; its particles (by the reflection of the fluid medium in the bubbles) seem smaller than the particles of the air: these little cells, or bubbles, fill'd with a fluid body, of the same nature with flame, keep a constant correspondence with the particles of light; which has a free intercourse to the particles that inhabit these little bubbles.

S E C T.

S E C T. IX.

Of the brittleness, and malleableness, of Metals; to which are premis'd some reflections on the difference, betwixt Fluidity, and Firmness.

WHat has been said of ice, and glass, the manner how they lose their fluidity, and receive a solid form, may give some information to a diligent enquirer, into the nature of firmness, and fluidity.

In all fluid bodies, there is a quantum of rarified air contain'd in an infinite number of small bubbles; but so that if any part, of the fluid body, suffer the air, that is contain'd in these bubbles, to be more rarified, or condens'd, the bubbles, of the whole fluid,

do, immediately, *break*, and *mix*, their *air*, with the more *rarified*, or *condens'd*, *air*, of their neighbouring *bubbles*, to make an *equilibrium* in the whole *fluid*; by how the much more *rarified* the *air* is, that is contain'd in these *bubbles*, by so much closer the *texture*; and by so much heavier the *fluid*: but that all bodies, whether *fluid*, or *solid*, (for *solid* bodies have, in their, most minute, *particles* little *cavities* fill'd with this *rarified air*) contain, within their *bubbles*, *air* more *rarified* than the ambient *air*, in which they are plac'd, must be affirm'd; for otherwise, (as will hereafter be made more plain) if the ambient *air* did not, with greater *weight*, or *force*, resist the *spring* of the *air*, contain'd in these *bubbles*, which wou'd, if the *air* were a lighter *medium*, have a continual endeavour to flow to it; the *body*, whether *fluid*, or *solid*, wou'd be divided, by the *interposing* of the *particles* of the *air*, into
particles

particles as fine as the *air* it self. This
 is plain in the killing of *quick-silver* ;
 when the *air* (by straining of the *quick-*
silver through *leather*, or otherwise) is
 suffer'd to insinuate it self between
 the *particles* of *Mercury*, those which re-
 main seem in the form of *dust*, or
powder ; and lose the *connexion* that
 there was between the *particles* of the
 whole *body* : nor can any of the, now
 remaining, *visible* parts, afford to its
adjacent part (from which it is divided
 by a *septum* of *air*) any *assistance*, when
 it suffers by having its little *bubbles*
 more *rarified*, or *condens'd* : for as it is
 a *visible* particle, it must consist of
bubbles ; since, even *invisible* ones, may
 consist of many thousands, and yet,
 all these join'd, not be sufficient to
 make one particle bigger than the *par-*
ticles of the *air*, in which we *breathe* ;
 so that even a particle of *air* may be
 suppos'd to consist of some thousands
 of

Vid. Boyle of *Effluv.* of bubbles, or parts of its substance: and this won't seem strange when particles so small, and invisible, as those that are left on the ground, by a running hare, shall send from them, continually, so many, more minute as do affect the air some yards distance for several hours. But to return to our Mercury, we find the change that it has suffer'd, by being kill'd, wholly proceeds from the intervention of air between its parts; therefore each of those parts that remain, being the same that compos'd the whole fluid, (but only separated from the rest) is, it self, a fluid body; with no more difference, in property, or affection, from that body, which was compos'd of the union of all its parts, than is observ'd betwixt a pint of the same fluid, and 100 Gallons: for each of those small particles, which are but just visible to the eye, are compos'd of an, almost, infinite number of small bubbles,

bles, which are fill'd with a rarified air, by which the invisible particles are kept together, and made visible: and tho' the air shou'd continue to insinuate it self between, and divide, one of these, so small, particles, and again subdivide so long until it reduce it as small as its own particles, and, consequently, cause it to swim, and flow, with it, tho' this, I say, shou'd happen, yet might each of these aerial particles of Mercury be, with as much justness, term'd a fluid body, consisting of several particles in a continual motion within themselves.

This does, naturally, lead to the consideration of solid bodies; which seem, by this rule, to be nothing but an union of fluid particles; each of which particles, might, properly enough, be term'd a fluid body: several of these particles, or small fluid bodies, having each, its parts join'd, by the equal pressure of the external air (which being more condens'd than the internal air,

air, or that which fills its *bubbles*, forces each *particle*, as the *rarified* air within the *bubbles* is *purser*, or *grosser*, to a *closer*, or *opener* texture) and meeting, this will follow : either, 1st, that these *bubbles*, joining, make the
Vide Fig. I. *air* between each *bubble* (for in joining several little *spheres* together, there may be observ'd *irregular*, *triangular*, *Figures*, or a *space* which always is included, when three *circles* touch each other, between the three points of contact) equally *rarified* with the *air* included in the *bubbles* : and then the *surfaces* of the *bubbles*, meeting with no greater *pressure* from *without*, than they have *within*, will, easily, *break*, and *mix*, upon any *occasion*, the *internal* air within the *bubbles*, with the *external* air included between the three points of contact of each *bubble* ; which union composes a *liquid* body : or, 2^{dly}, the *air*, contain'd between the three points of contact, will be
more

more condens'd than the *air* in the *bubbles*; and more *rarified* than the *external air*: for, as I have intimated, the *air* that is included within the *surface* of any *body*, cannot be either *equally*, or *more*, condens'd than the *ambient* and then the *bubbles* will keep themselves clos'd; and not communicate (without violence) the *air* in the *bubbles*, with the *air* between the three *points* of *contact*: this is what, vulgarly, is call'd a *solid*, or *firm*, *body*; which will be made more plain from the vulgar *experiment* usually made by boys, who, by joining a piece of wet *leather* to a *stone*, (but so that the *air* between the *stone*, and the *leather*, be more *rarified*, than the *ambient air*,) the *leather* shall, in a manner, seem, as if it grew to, or were one *part* of, the *stone*; so firmly does the equal *pressure* of the *external air* cement the two *bodies*, which, betwixt them, find a *space*, or *medium*, less inclinable to resist their embraces.

The

The same happens to the *particles* of a *solid body* ; which are to be represented by an infinite number of little *spheres* join'd ; betwixt every three of these little *spheres*, there will be a small *triangular figure* ; these figures will contain *air* in their *cavities* heavy enough to keep the little *bubbles* from breaking ; and yet rarified enough to keep (by *attraction*, or *suction*, if I may use those terms) three *bubbles* together clos'd, and join'd, at their points of *contact*, by the *pressure* of the ambient *air* (which cannot , because of the texture of its pores, insinuate it self, in so gross a *particle*, to these triangular figures, as it flows within its open *Atmosphere*,) all this will seem plain, to one who has been conversant with the *Pneumatical Engine*.

This also demonstrates the *reason* of *liquefaction*: for when a *solid body* (for instance, a *ball* of *silver*) meets with a violent *fire*, it must be thus
opera-

operated on ; viz. the little triangular spaces, between the three points of contact, will, by the intermission of the particles of fire, and the drying up of the oily particles, be reduc'd to an equal degree of rarification, with the air contain'd within the spheres themselves, and consequently the air, within the spheres, meeting with no longer a resistance from the pressure of an heavier Atmosphere, (or what the ancients suppos'd to have been, a suction, or attraction) from within, propter fugam vacui, will break the bubbles that imprisoned them, and mix with the air in the triangular figures ; and all the air, as well what is contain'd in the little globes, as what is between the three points of contact, being mix'd, and, consequently, of an equal gravity, no part of the body, in this state, is bounded by any other force, or pressure, than that of the ambient air ; which is only contiguous to its outer surface ;

face ; the *pressure* of the *internal air*, which fills the *triangular spaces*, being taken off : but, upon the sudden *receding* of the *fiery particles*, the *fluid silver* which continually forms it self into a *successive* number of *bubbles*, is surpris'd with an *unequal motion* ; for that *rarified air*, which in the *egress* of the *fiery particles*, was contain'd in *small bubbles*, does not meet with the same *loss* which the *triangular spaces* receive, by the *departure* of the *fiery particles* ; and consequently the *air*, being heavier in the *triangular spaces*, forces the *bubbles* to join, and keep, their *places*.

I conclude, therefore, that all *bodies* are liquid upon no other account than that the little *bubbles*, of which liquid *bodies* are compos'd, are (at least the greatest *part* of them) fill'd with an *aerial substance* ; of equal *weight*, and *pressure*, with the *aerial matter*, that is included in the *triangular figures*, be-

tween

tween the three points of contact, and as the *liquid* abounds in a greater, or less, degree, with *bubbles*, whose *aerial matter* within their *cavities*, is more rarified than the *aerial matter*, by whose *community* the *liquid particles* have a free *intercourse* from one another; the *liquid* is more, or less, *pure*, or *spiritual*: for there is no *liquor* so pure, but that it does receive some let, or *hindrance*, in its *motion*, by several *particles* which flow in its *body*; and cannot dissolve themselves into sociable *forms*, to afford the rest, of the fluid, *share* of their *air*; and, in *exchange*, receive *share* of theirs: because the *aerial matter* within the *bubbles* of some of the *particles* (for each *particle* may consist of several *bubbles* as *minuter particles*) may be more rarified, than the *aerial matter*, of which the sociable *particles* that compose the *liquid*, is; and consequently the lighter *medium*, within these *forreign particles*

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cles can't, by its own *weight*, or *strength*, force its way, through its own *surface*, which is press'd close by the greater *weight* of the sociable *medium*. By this means, *Spirit* of wine, (and all *liquids*, that, by the *ingress* of the *particles* of *fire*, have, as it were, an *Æquilibrium* made betwixt the aerial matter of all their *bubbles*) has its *parts* in the swiftest *motion* (or, at least, as swift a *motion*, as any, commonly known, *liquid*: for Mr. Boyle supposes *Oleum*

Vid. Boyl's *Mechanical Origine of Heat and Cold*, p. 83.

Vid. *Transf.* Royal Society, vol. 1st. p. 620. where 'tis affirm'd that *Ol. Petræ* is the lightest of all visible fluids.

Petræ to be a *liquid*, specifically, lighter, and, consequently, having its *parts* in a swifter *motion*) of any containable *fluid*, that is, vulgarly, known; having the fewest forreign *bubbles*, that do consist of aerial matter more rarified than that which composes the *unity* betwixt the whole *liquid*. *Water* (and all crude *juices*) consists of more

more of these foreign bubbles which hinder its *motion* from being so swift, and penetrable as *Spirit of wine*: *Balsomes*, *Syrups*, *Turpentine*, all other viscous *juices* meet with more of these foreign *particles*, as *obstacles* to *motion*, than *water*; *pitch*, and all other resinous *bodies* meet more *obstacles*, from foreign *bubbles*, than the viscous *juices*, and scarce keep any *community* with one anothers *parts*, even amongst those *parts* that are inclinable to be *sociable*, without *violence*, or having a *rarification* made in the whole by *fire*, to bring all the *parts* to a nearer *affinity* with the foreign: *lead*, *tin*, *silver*, *gold*, and all other malleable *metals* meet with so great an *opposition* from foreign *particles*, that they all consist of a great number of *particles* inclinable to be *sociable*; yet so many foreign *particles* intervene, that the *sociable particles* can have little, or no, *community* with one another, without the help of a *hammer*, or

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fire,

fire, or other forceable instruments.

From this will appear, plainly, what is meant or to be understood by a *body*, term'd *malleable*; 'twill follow to consider, the reason of *brittleness* in *glass*, temper'd *Steel*, &c. If a *body* does consist of so many *forreign particles*, as do *intercept*, or *cut off*, all *community* betwixt the *sociable particles*, when any *violence* is us'd to this *body*, it must *separate* it self, and *divide* into *parts*: because, by the *violence* of the *hammer*, or other *instrument*, the *aerial matter*, within the *triangular figures*, included betwixt three *bubbles*, at their *points of contact*, is *compress'd* by the *flatning* of the *bubbles*, and by a *sudden dilating* (as may be observ'd in the *Springyness*, or *Elasticity*, of a *bow*, which has not the effect; unless when bent, it is suffer'd to regain its *natural state*, by a *sudden motion*: the same

same not happening if it come, leisurely, to that *state*) the other *parts* not being able to receive *part* of the compress'd aerial *matter* to ease those parts which, by its great *compression*, suffered, as it were, *pain*, being forc'd into an unnatural *state*, must certainly, by the *elasticity* of the aerial *matter*, endeavouring, very suddenly, to regain its former *space*, and restore the compress'd, and flatned, *bubbles*, to their natural, and globular, *figure*, be forc'd from the *contiguity* they had with the compress'd aerial *matter*; and, consequently, suffer the ambient *air* to come between, and divide them.

Glass, *Steel*, and other metalline *bodies*, receive this disposition from the *ingress* of the foreign *particles* of *fire*, kept within their *body*, by the sudden cooling of the superficial *parts*; which, by the *Interposition* of the *parts* of the *body*, they enter, lose the *community* they, otherwise, would have among themselves,

and likewise interpose, and hinder, the *community* there would, otherwise, be, betwixt the *particles of the body*, into which they have enter'd. This is further to be explain'd by the two next ensuing *Sections*.

S E C T. X

Of Elasticity.

*Vid. Boyle Susp.
of hidden qualities in
the air. p. 24.*

MR. Boyle, in his *Suspensions* about hidden *qualities in the air*, is at a great *loss* to find out what *sort of Substances* those are in the *air*, which are, so absolutely, necessary to the subsisting of *flame*; suspecting (as he himself says) odd *Substances* either of *Solar*, or *Astral*, or of some other *exotic nature*, on whose account the *air* is so necessary to the existing of *flame*.

Me-

Methinks so jealous a *Naturalist*
 might have had as great *matter* for *sus-*
picion from the *Springyness*, or *Elasticity*,
 in the *air*, which he has so often taken
notice of, but never, as I know, at-
 tempted to find out, or, at least, has
 not demonstrated from what sort of
substances, or *particles*, in the *air*, this,
 more strange, *effect* proceeds; which
 he is apt enough to ascribe, as he does
 several other effects, to hidden *qualities*.
 If *Elasticity* be consider'd, according
 to what *thoughts* are here, already, de-
 liver'd, in my *opinion* 'twill be no dif-
 ficult *matter* to resolve the *doubt* in
 some *measure*; the *air* has been con-
 sider'd as a *medium* compos'd of (as
 it were) a *Rendezvous* of the *particles*
 of all sorts of *bodies*; the grosser of
 these *particles* are compos'd of several
 other *particles* join'd either with an
Æquilibrium of aerial *matter*, and then
 composing (if so I may term it) a
 small liquid *body*; or with an unequal
 E 4 proportion

proportion of aerial matter (the aerial substance, between the points of contact, of the three bubbles, being heavier than the aerial matter in the bubbles) and then composing a small solid body, or part; either brittle, tensil, or malleable, according to the several dispositions before mention'd: the air therefore, consisting of infinite numbers of both sorts of those particles, indiscriminately, mix'd, (any weight, pressure, or force, that keeps these parts in an unnatural state, when this force is, suddenly, taken away, the body before compress'd, whose parts or bubbles were flatned) will, with as much swiftness, regain its natural state, as the force (that kept it an unnatural state,) is remov'd; as when a cork is depress'd, by a weight, under the surface of water, the weight being remov'd, that forc'd this cork to sink, it will, immediately, emerge.

The same happens to bows, and springs, whether of wood, or steel; having

ving their *bubbles* flatned, and being of a *temperament* which will not suffer the compress'd aerial *matter* to, either get out of the *body*, or ease it self, by having *communication* with the rest of the aerial *matter*, within the *body*; the compress'd aerial *matter* flying, by a sudden *motion*, into its natural *state*, causes the observable *effects*, in all *instruments* of that *nature*; *lead*, and all *metals*, that yield, easily, to the *hammer*, if bent, have not the like *effect*; but remain in the *state* they are put into; without the least *commotion*, or *resistance*, in their *parts*. The *reason* is because, in *lead* there is a nearer *affinity*, of the *particles*, to those that compose liquid *bodies*; the *particles* of *lead*, tho' not having an absolute *communication* with one another, yet meet with less *opposition* from *forreign particles*.

The *nature* of *Elasticity*, may be better comprehended from the following *Experiments*.

A *Bladder* full, and hard, blown, if it be put into a *receiver*, and the *air* drawn out nimbly, the *spring*, or *elastic* force, of the *internal air*, will burst the *bladder* : if the *bladder* be put into the *receiver* very relax, or but half blown, the *Elasticity* of the *internal air* (the *external air* being exhausted) will force the *bladder* to swell, as if it had been full blown at first ; and, upon the *admission* of the *air*, it will immediately, grow relax : and, notwithstanding a *medium* of *water* which may surround the *bladder* and seem to take off the *pressure* of the *air*, yet if a half blown, or relax, *bladder* be put under *water*, and, from the *surface* of the *water*, the *pressure* of the *Atmosphere* be remov'd, notwithstanding the *water*, I say, the *bladder* will swell, and occupy much more *space*, than it did before.

Vid. Boyle *Phyfico Mechan. Exp. of the Spring. of the Air.* p. 105.

These, and several other, *Experiments*, indicate that *Elasticity*

Elasticity is nothing else but a jumping of *bodies*, confin'd, into a *state* of more ease, or a less degree of *confinement*.

S E C T. XI.

Of Sounds, and their propagation; with an account of Echoes.

IT has been, and is, I suppose, taken for granted, by all *Philosophers*, that the *motion* the *air* is put into, and the *effect* that *motion* has on the *Tympanum*, or *drum*, of the *ear*, is the cause of *sounds*, and their *perception*; but, to me, it has several times prov'd a *matter* of *wonder*, how the *air*, which will not be put into such a *motion* as to yield a *sound*, by several, very great, *bodies*, put into swift *motion*, should yet,

yet, by the slight *touch* of a *fiddle string*, or the *wire* of a *harp*, cause a *motion*, or *shivering*, in the *air*, sufficient to be perceiv'd some hundred *yards* round ; until, accidentally, casting into a smooth clear *water*, a single *pebble stone*, I could perceive the *surface* of the *water* to be annularly mov'd for several *yards* ; and by degrees, as the *circles* grew larger, and larger, they were less perceivable , at last quite vanishing: yet, at the same time, large *fish*, which swam with a very quick *motion*, under the *surface* of the *water* did not at all disturb its *smoothness* : but, by several *experiments*, I found that if a *glass bubble* were broken, ever so low, beneath the *surface* of *water* it would make the same *commotion* on the *surface*, that the *pebble* had done.

This, with some other *experiments*, laid a *foundation* for the following considerations concerning *Sounds*, and *Echoes*.

'Tis

'Tis plain, that while a *fish* moves below the *surface* of the *water*, tho' ever so quick, the *Æquilibrium* of the *water* is not disturb'd; the *fish* occupying no more *space*, during her *motion*, in one place, than she had done in another, of the same *fluid*, which has one common *surface*; (could she dilate, or contact, her *body*, tho' beneath the *surface*, it would, very, much disturb the *smoothness*, of the *surface*; but the smallest *stone*, if thrown into the *water*, causes a *separation*, in its *surface*) and, consequently, a double *motion*: one, which forces the *parts* of *water* from the *space* which the *stone* takes up when it, immediately, falls on the *surface*, of the *water*; and another *motion*, caus'd by the flowing back, or closing up, of that *space*, on the *surface*, which the *stone*, in its lower *descent*, forsakes.

The same reason offers in the *production* of all *sounds*: for to produce a *sound*,

sound, 'tis necessary that there be caused a *separation* in the *air* : and, that in the very *spot* where the *sound* is, first, produc'd, there be such a *vacuum* as is suppos'd to be in *receivers*, when the *air* is exhausted, by the *Machina Pneumatica*, this gives a tremulous motion to the *surface* of the *air* (for in that *separation* it may be suppos'd, till the *separation* closes, to have an annular *surface*) which continues to extend its operation farther, as the first *separation* was greater or less: but the motion of a mans *body* in the *air*, or of any part of it, as his arm, &c. or the motion of any other *body* which does not meet another, tho' ever so quick, is only like the motion of a *fish*, swimming beneath the *surface* of the *water*, which gives no tremulous motion to the *air*, by causing great part of its *body* to be affected with a double motion; one, by the parts of *air*, which are forc'd from the *vacuum*, and disturb, and force out

out of their places, the neighbouring parts of air; the other, by the receding of those, or some other, parts of air into the, again clos'd, vacuum. 'Tis plain when any two bodies meet, and dash against each other, with violence, as the two bodies are a greater, or less, degree from liquidity, the sound made, by their meeting, will be continued, or shortned: and that some sound must be produc'd by two bodies meeting, will be evident from the separation their meeting will cause in those points, where the two bodies touch each other.

How the continuation of a sound is preserv'd by the disposition of both, or either of the bodies so meeting, as the sound of a bell, a glass, &c. it may not seem impertinent to consider.

Fluids receive a perceptible motion upon no other account than that part of the surface, of one fluid, encroaches upon the borders of its neighbouring fluid:

id : For example ; a *fish*, tho' swimming in the *water*, causes no disturbance in that *element* ; yet could this *fish* swell, and occupy more *space*, than it did before, the *surface* of the *water* (nay the whole *body* of *water* in general) would receive a *curling motion*, from those *parts* of *water* which were, before, in the *space* that the swell'd *fish* takes up, which flow through the whole *body* of the *water* to make an *Æquilibrium* : and because the *water* can find no *room* for these *parts* to be contain'd within the *space* it occupied before, the whole *body* of *water* is forc'd to be put to the *trouble* of removing out of its *place*, to make *room* for these *intruders*, by encroaching on the *air*, until it has gain'd as much *space* from the *air*, as the *fish*, by swelling, depriv'd it of. Thus, when a *bell* is struck, in any *part*, the small *bubbles* (of which the *bell* is compos'd, which I have intimated to be, every
 one

one of them, *fluid bodies*) upon the place where the *bell* is struck, by the separation of the *air*, flow in upon the *vacuum*, where they find a less *pressure*, than their neighbouring *bubbles* receive from the *ambient air*, (which keeps the *parts*, of all solid *bodies*, in their *place*,) and, by thus quitting some of their *places*, their neighbouring *bubbles* (or, at least, the *aerial matter* that surrounds them, included betwixt the three *points of contact*) assume the *space* that they quitted; so that the struck *bubbles* finding themselves forc'd back, by the closing of the *vacuum*, force also their *neighbours* back again to their *places*; which, like a *pendulum* once put in *motion*, move, almost, as far back out of their *place of rest*, as as they were forc'd *forward*; until, by *degrees*, wavering less and less, they obtain, each, their proper *places of rest*. This *motion* is not in *bodies* that are *liquid*; and by how much nearer *affinity*,

the *body* has to *liquidity*, by so much less does it partake of this ringing *quality*; because, in liquid *bodies*, there is a *communication* between the *bubbles* of the whole *body*; and they have all but one common *surface*: whereas the *wavering motion*, which causes our *perception*, is propagated by the encroaching of the *surface* of one *medium*, upon that of a differing *medium*, whose *specifick gravity* must be different; all brittle *bodies* are compos'd of *bubbles* which have small *Atmospheres*, of aerial *matter*, of a very differing *specifick gravity*; this happens by the *admission* of so many *forreign particles*, betwixt its *bubbles*, and which consequently, have their parts separated by abundance of differing *surfaces*.

It may be objected that I seem to agree, as if *bodies* were no otherwise to be reckon'd *solid*, than that they have a *number* of fluid *bubbles*, press'd together, by the equal *pressure* of the *Atmosphere*:

or,

or, what will be the same, that these bubbles are suck'd together by a lighter medium, *propter fugam vacui*, but this is demonstrated by experiments; rather the contrary appears: for in an evacuated receiver, tho' ever so well free'd from the pressure of the ambient air, the included body remains entire; which could not be if no other cause chain'd its parts together than the pressure of the Atmosphere: I answer, that the vacuum Boyleanum, can, strictly so speaking, be no more reckoned a vacuum, than a bottle close stopt, and full of air, when under water (because the water is excluded from entering its cavity) ought to be accounted void of all Substance: for the *Æther* (if I may so term what is left included in *Vacuo Boyleano* when the air is excluded) that encompasses a body enclos'd in the Pneumatick Engine, bears a very great disparity, in specifick gravity, from that, more subtil, *Ætherial*, matter, that is included within

the *bubbles* of the *body* ; therefore, tho' it suffers the *body* to *swell*, yet this *space*, or *vacuum Boyleanum*, retains *pressure* enough to resist any *effort* that the included *Ætherial*, or *Aerial matter* (what ever it may be call'd) within the *bubbles*, may have to get out ; which force, because of the extream *Spirituousness* of it, can be little, or, in some of the *bubbles*, (for I have intimated a difference) scarce any at all.

The nature of *SOUNDS*, by this time, seems to me pretty well *hinted* at. But why *sounds* should *reverberate*, and *return* to the same *place*, from whence they were, first, *sent*, and at some distance of time after their *departure*, remains to be consider'd. It is observ'd that if *wire*, *cat's gut*, &c. are not plac'd upon some *hollow bodies*, which have their *internal cavities* fill'd with *air*, whose *surface* is separated, in every part, from the common *air*, except at some few *holes* where the external *air* has a
communication

communication with the internal ; the sound made by the trembling of those tinsel bodies, when slenderly, touch'd, is very little, or scarce, *peceiveable* : the reason of which, I find most easy to be comprehended, when *air* is consider'd with the *analogy* it bears to *water* : I have often taken notice that *water*, when put into *motion*, by the *wind*, and raising it self, above its common *surface*, into *waves* ; when one, or more, of these *waves*, is dash'd against a *wall*, which is a *bound*, that, as it were, confines, and hems in, the *water*, upon the *reverberation* of this *wave* there is a hollow *cavity*, or *vacuum*, left, by the *waves* receding as far below the common *surface* of the *water*, as it had swell'd above ; which *cavity* against the *wall* (by the rule of *Hydrostaticks*) must cause another *motion* in the *water* which flows to make an *Æquilibrium*, or an equal *surface* ; this may be offer'd as a reason why, near *rocks* in the *Sea*, a-

gainst which the waves dash, there is always observ'd a greater course of waves than in any other place, at a greater distance from them. To apply this observation to our present purpose, 'twill be pertinent to take notice of the sound made with a drum struck by a drummer; the struck parchment being extended, almost, as far nature, without tearing, will permit, by the force of the blow, has its surface thrust inwards; which, with as much quickness, jumps outwards, by the Elasticity it receives from its parts, that are forc'd into an unnatural state; in the extraordinary extension by these two motions, the internal air is reverberated backwards, and forwards, against the opposite head, or parchment, of the drum (which is also elastick:) in these several reverberations (as in the reverberating of the wave against the wall) there are several vacuums left, which to be fill'd, and an *Æquilibrium* to be made, requires

requires the *assistance* of the *external air*, with which the *internal* keeps constant *correspondence*, by small *holes* in the *side* of the *drum*. Almost the same reason offers in all *strung instruments*: for the *external air*, receiving a *curling motion*, by the *trembling* of the *string*, communicates this *motion* to the *internal air*: which *motion*, not being lost, when it comes to the *confines* of the *instrument*, and being, there, stopt in proceeding, regularly, forward, as the *motion* given to the *external air* did, 'tis reverberated backwards, and forwards; in every one of which *reverberations* the *external air* receives a particular *affection*, by being oblig'd (because of its *correspondence* with it) to assist, and help out, the *internal air* in any of its *affections*; so that when, by the *reverberation* of the *internal air*, any small *vacuums* are caus'd at the *side* of the *instrument*, (as in the parallel, the *water* dashing against the *wall*) the *external air* must receive

to it self the *superfluities* of the *internal air*, to hinder a *compression* of *air* within the *instrument*, which would, otherwise, happen ; and upon the closing of these *vacuums*, the *external air* must refund as much as it receiv'd from the *internal* ; and this will happen as long as there remains any *trembling* in the *strings*, or any *reverberities* in the *instrument* : if it be examin'd how the *trembling* of the *strings*, causes a *sound*, (whereas no *sound* can be propagated, as has been intimated, without a *separation* of a *surface* of the *air*, but the *trembling* of a *string* is not sufficient to cause a *separation* in the *air*) it may be answer'd, that whatever *touch* causes that *trembling* in *strings*, in that very *spot* is the *sound* begun ; because, in that *spot*, the *bubbles* that compose that part of the *string* that receives the *touch*, are set, a little, at *liberty*, from the *unnatural state* that they are plac'd in by their *extream extension* ; and consequently

quently jump forwards; at which motion all the bubbles, of which the string is compos'd, successively succeed that jump, and are all as quickly forc'd back again into their places by the sudden closing of the first separation; however, as the first separation was surprising, so is the close which forces them in a state more unnatural than the extension of the string, and the ambient air may allow; and consequently (as unto a vibratious pendulum) successive waverings happen betwixt the bubbles, encroaching on the surface of the ambient air, and the ambient air on the surface of the bubbles, less, and less; until, by degrees, both receive a natural state.

This explanation of sounds leads, directly, to the solution of one very notable Phenomenon in nature, viz. that of Echoes: which are nothing but the reflection of the motion the air is put into by the walls of hollow vaults, or caverns;

vers, thus happening, the *motion*
 given unto the whole *body* of the *air* in
general, is communicated to every *par-*
ticular portion of *air*; which, at some
parts of its *surface*, is bounded from the
 common *Atmosphere*; these *bounds* hin-
 der the *wavering motion*, which is com-
 municated to the bounded *air*, from
 proceeding along with the rest of the
circles which move with all the *bounds*;
 and, consequently, the *internal air* is in
 greater *motion* than the *external*; because
 it *stops* some of the *motion*, and retains
 it to it self, that which the *external* should
 have receiv'd; and, of necessity, this great-
 er *motion*, in the *internal air*, must cause
 another, in the *external*; which as it
 is farther, or nearer, to the place from
 whence the *sound* was, first, sent; so
 it will, more *slowly*, or *suddenly*, re-
 turn.

S E C T. XII.

Of Light and Colours.

I Must own I am not fond of commending Mr. *Hobs* : and yet, in this, I am forc'd to acknowledge, he comes the nearest my mind of any *Philosopher* I have met with ; and in a great many other things, in my opinion, argues very subtilly, tho' in the main he proceeds upon a wrong foundation.

Tho' I design to consider the *Soul* with all its *operations*, and *affections*, in a particular *chapter* ; yet it seems necessary, for the better understanding this, and the preceeding *section*, to consider, a little, how the *Soul* must, unavoidably, be affected (the *organs* of the *body* not being vitiated) by any *motion* in the ambient *air* : the *ear* is made with a thin, opaque *membrane* which
very,

very easily, by the *impulse* it meets with from the *wavering motion*, in the *ambient air*, is forc'd inwards; and, consequently, forces the whole animal *Soul*, which possesses every *place*, or *space*, within the *organick form*, into a contracted *state*; which, by a reflected, or elastic, *motion*, against the *membranes* of the *ear*, (no other bounds of the *human body* suffering themselves to be intruded, or extruded, by so slight a *motion*) suffers the animal *Soul* to be, almost, as much *dilated*, as, before, it was contracted; which *wavering* in the *animal Soul*, successively, continues longer, or shorter, according to the first *impulse*, or *separation*, in the *air*, which is the cause of the *wavering motion*, not only in the *ambient air*, but also in the *animal Soul*: the *membrane* of the *ear* being opace, no other *motion*, in the *air* (the *air* being several ways, mov'd within it self, without having its substance contracted, or dilated) can affect

it ; but such a one as causes an *impulse* by the *contracting*, and *dilating* the whole *body* of the *ambient air* : which, by its *elastick force*, strikes on the whole *body* ; but finds no part that yields to its *stroak*, except the thin *membrane* of the *ear*.

But we have suppos'd another notable *motion*, in all *fluid bodies*, caus'd by the continual breaking of their *bubbles*, and a *rarifaction*, in some *parts* ; consequently the *remoter*, as well as the *nearer*, *parts* of the *air* (it being a *fluid*) are affected, or mov'd, by the *rarifaction*, and break their *bubbles*, and move towards the *rarifaction* to cause an *Æquilibrium* : in this *motion* the *parts* suffer little, or no *contracting*, or *dilating*, (except in the place where the *rarifaction* is ; which, if very great, and quick, causes *sound*, as in the burning of *thorns*,) and therefore use no *impulse* against any *body* they meet.

The human *Soul*, being the *principle*
of

of *motion* within the *microcosm*, of human *body*, and design'd, by the *creator* to participate of every universal *motion* of the *macrocosm* in which it is plac'd, might, justly, think it self very much wrong'd if it had no *organ*, or *membrane*, by which it might receive *intelligence* what *motions* were actually operating on it; for, in any *rarification*, when the *bubbles* of the *air* are broke, and flow towards any *body* to make an *Æquilibrium*, the *bubbles* also of that *body*, at least as many of them as are contiguous to the *air*, must break themselves; and, when this is done very quick, and the *continuation* long, so as to set the whole *frame* of the *body* in a more than ordinary *state* of *motion*, the *perception* of it is called *heat*, which affects any, or every, part of the *body*: but the *organs* of the *body* being so fram'd as to receive continual *alterations* in their *motion* not only from *external*, but also from *internal*, *causes*, (each
passion

passion causing a disturbance, or commotion, in the *blood*) small alterations in the ambient *air*, would pass unperceiv'd, did not *nature* provide a transparent, pervious, *organ*, to suffer the *Soul* to be, more immediately, affected with the motion the *air* receives from a *rari-faction* in any part.

This *Organ* (viz. the *eye*) suffers the thin and subtil *medium*, which fill'd the *bubbles* of the ambient *air*, to have communication with the animal *Soul*; which is a *substance* for subtileness, and spirituousness, of nearest affinity to the *Soul*, or *life*, of all living *Creatures*: and, consequently, the *Soul* of every living *Creature* is affected with a *Sympathy*, towards its own likeness, tho', because of the interposition of matter, it can neither comprehend the form, or nature, of this subtil ætherial substance; much less is it able to investigate its own form, or essence; but by the means of the ætherial medium, all gross forms of light

grosser *matter* are perceiv'd: yet, by the *interposition* of these *material forms*, the *ætherial medium* (which I would term *light*) receives a peculiar *reflection*, or *disposition*; (which I design to term *light*) and the *Soul*, receiving this *light* with the *irregular reflection*, or *disposition*, it has receiv'd from the *intervening matter*, must form some *notion*, or *conception*, of the *body*, or *shadow*, which causes this *affection* in the *light* it receives.

That the *Soul* must, of necessity, receive a *motion* from the breaking of the *bubbles* in the *air*, may be concluded if it be granted that the *Soul* is a *fluid*, or, at least, is contained in a *fluid vehicle*, as I suppose it to be: to explain this we may consider how the *air* is affected by the *flame* of a *Lamp*, or *candle*; in the *space*, which the *flame* occupies, there is a less *pressure* than what is made by the *ambient air* (the *oleagenous particles* of *matter*, of which the

the *flame* is compos'd, being lighter than (the *aqueous*) and consequently, the *bubbles* which are, immediately, contiguous to the *flame*, not receiving so great a *pressure* from the *flame*, as they receive from the ambient *air*, must break, and be dissolved, and leave room for those *bubbles* which they, immediately, bound, and kept in their places, to succeed their *dissolution* ; and be dissolved also : these two *ranks* of *bubbles*, being absorb'd by the *flame*, the third and fourth advance ; and, after them, their *followers*, 'till, in a trice, the whole body of the *air* is put, as it were, in a march towards the *flame*, the *air*, moving thus forwards, all *bodies* which have their *parts* joined, in a solid form, by the *pressure* of the *air*, must also have (at least in some of the *bubbles* of which they are compos'd) an endeavour to move forwards, and succeed the motion of the *air* towards the *flame* ; and, in this endeavour, the *parts* of the

solid *body*, are more tumid, and if the *flame* be violent, and occupy great *space*, and the *body* near to it, the *bubbles* of the *Body* are, actually, *disposed*, and sent off in great plenty; the ambient *air* being made too light any longer to keep all the *parts* together: which by its greater *pressure*, it, before, bound, in one *mass*, in *animals*: if this *rarification* of the *air* be so great as to cause, in the *Soul*, a *perception* from any *part* of the *body*, it is call'd *heat*; if it be so moderate as to cause in the *Soul* a *perception* from the eye only, 'tis call'd *light*; which *light* were it to be *defin'd*, is only a *continual dissolving*, fluidity, or *motion*, in the *vehicle* of the *animal Soul* caus'd by its actually moving after the departing *bubbles* of the *air* towards some *place* of *rarification*, and if any *body* intervenes in this forward *motion* of the *Vehicle* of the *Soul*, which reflects this forward *motion* back again to it self, according to the *disposition* of the *parts* of the

the *body*, that thus reflects these *particles*, that emanate from the *animal*, the *Image* or *Impression* is delivered back to the *Soul* with some peculiar shade, which causes, in the *Soul*, a differing apprehension, from what it receives, meerly from the progression of its parts; and gives it first an *Idea* of the dimension of the *body*, that is interpos'd betwixt it, and the progression of its particles, or *Spirits*, that are sent from it; and secondly the degrees of difference between the reflection, the *body* causes, and the perception, it would have receiv'd, had not the *body* been interpos'd; and this is term'd colours: which are only degrees of difference betwixt a perfect shade, or darkness; and no shade, or light.

If the *body* be very *Diaphanous*, as pure transparent clear glass, it cannot properly be term'd of any colour; because it suffers those parts, or spirits, which are sent, from the animal *Soul*, to pass with, scarce any, reflection: if

the *bubbles*, that compose the *superficies* of a *body*, be fill'd with a very subtil ætherial *Substance*, of a much thinner nature than the ambient *air*, the *reflection* carries back, to the *Soul*, part of the *image* of the ætherial matter, which fill'd the *bubbles*, by which it was *reflected*; and the *resemblance* of this subtil, ætherial matter (this being of nearer affinity with those *Spirits*, that were sent from the animal *Soul*) is term'd *white*, as being a *reflection*, which, the least, *shades*, or alters, the *image* of the *light*, it self.

This *solution* of colours, may seem the more plausible to some people by its having so ingenious an *Author* as Gassendus to back it.

Vid. Gassend. Epist. 2.

De Apparente Magitudine. p. 45,

“ Ad hæc (says he,
 “ having reference to
 “ what goes before)
 “ Spumam ex aqua pura,
 “ ra, non alia ratione videri candescere,
 “ & albescere, quam quod sit con-
 geries

“ *geries* confertissima minutissimarum
 “ *bullarum*, quarum unaquæque su-
 “ um *radium* reflectit; unde conti-
 “ nens *candor*, *alborve*, apparet. Denique,
 “ *nivem* nihil aliud videri quam *spe-*
 “ *ciem* purissimæ *spumæ*, ex *bullulis* quam
 “ minutissimis, & confertissimis co-
 “ cohærentis: “but, what immediately
 follows, methinks, ought not to be
 omitted; as suiting very well in
 this place; “sed *ridiculum* me exhibeam,
 “ si tales meas *nugas* uberius proponem.

'Twould be very easy to enlarge on
 this *Subject*; to consider what *colours*
 may be produc'd from *mixtures*, and
 what sort of *substance* the superficial
bubbles of black *bodies* are fill'd with;
 but more particularly, the philosophi-
 cal *Proverb*, *adusta alba*, sed *perusta*
nigra, seems, here, to require our *thoughts*;
 also what *quality* it is
 in black *bodies* that dis-
 poses them to *heat*
 sooner, and in a great-

Vid. Boyle of Col-
ours. p. 126,

er quantity, than white bodies, might deserve notice : but these, considering

An experiment with a tile half white and half black, expos'd to the Sun; the white part of the tile remained cool whilst the black part of it was grown very hot.

with how much ease I find them to be solv'd, according to what thoughts are, already, delivered,

I think, would prove trifles ; and detain me, too long, from more material thoughts to be delivered in the following chapter.

SECT.

CHAP. III.

Of the Operation of Spirit on Body, or of Animation in general.

SECT. I.

Of the three sorts of Chymical Spirits, viz. vinous, acid, and urinous or animal: with the Analogy they bear to the Spirit, Soul, or Life of all bodies.

Chimists usually call those liquors, which they extract from bodies, by the help of fire, *Spirits*; whether from the notableness of their effect, or that they suppose them to bear some resemblance to the *flamma vitalis* of animals, is not material, every one framing this apprehension of them, viz.

that they are *liquors*, whose *parts* are in a swifter *motion* than any other *fluid*, that, less, merits the name of *Spirit*.

Of these kind of *Spirits* there are three sorts: the first is extracted from *bodies*, which by unloosing, or breaking, their *bubbles* (this is often termed *fermentation*) suffer the *oleagenous particles* to free themselves, in some measure, from the *aqueous*, and have commerce amongst themselves, and pass through the *aqueous* without adhering to them.

Bodies, in this *state*, when the *particles* of *fire* are admitted, through the *pores* of *glass* or other *vessels*, suffer the *fire* which is, it self, entirely, compos'd of the *oleagenous parts* of *matter*, to lay hold on the *oleagenous parts* of the *body* that it passes through, and, in its mounting, meeting with the ambient *air*, it receives so many *aqueous*, or *refrigerating particles* from it, as
do

do make the ascending *Spirit*, a few degrees heavier than the *air*, and consequently give it *weight* enough to sink, and form it self into a visible *fluid*; for any *body* that is, the least degree, grosser than the *air*, is visible; and, upon that account only, is *containable*, or may be kept for the use of *man*; for all things, lighter than *air*, are too nimble for us; and fly away whilst we endeavour to catch them. This first kind of *Spirit* is call'd *VINOUS*: and being compos'd, for the most part, of the *oleagenous parts* of matter, is inflammable

The second sort of *Spirit*, is extracted from all undigested *bodies*, of the vegetative, or mineral, *kingdom*, by the means of *fire*; whose *particles* entring between the *particles* of the crude *body*, catch hold of the *aqueous*, and *oleagenous parts* of the *body*, mixt as they are, without severing either from the other: and when the *liquor* falls

falls down congeal'd, into the *Recipient* ; the *Spirit* is term'd *ACID* : and is, altogether, uninflamable.

The third sort of *Spirit*, term'd *URINOUS*, is extracted out of the *bodies* of *animals* ; where, by the vital heat of the *animal*, the *oily parts* are, so perfectly, mixed with the *watry*, that no *fermentation* can separate their firm *union* ; tho' *fermentation* causes *animal bodies*, sooner to yield their *Spirit* ; for if crude, undigested, *animal bodies* be placed, over the fire, they, for a long time, send from them a stinking *phlegm*, before any *Spirit* can be forc'd over. This *Spirit*, by the entire mixture of *watry parts* with the *oily*, becomes not inflamable.

Mr. Boyle makes mention of a fourth sort of *Spirit*, which he stiles *anonymous*, or *neutral*, caus'd by the union of an *urinous*, and *acid*, *Spirit*. But he might, as well, have introduc'd a fifth from the union of a *vinous*, and

an

an *urinous*, *Spirit* : (as *Sal Volatile Oleosum*.) Or a sixth, by uniting a *vi-
nous*, and an *acid* : these three last, be-
ing compounded with one of the o-
ther two, ought not to be reckoned
in the *cardinal number* ; there being
properly, in nature, only three sorts
of *Spirits*, which, simply, differ from
each other.

These three sorts of *Spirits*, the
specifick gravity of each being greater
than that of *air*, may, notwithstand-
ing assist us in the enquiring after *sub-
stances*, or *Spirits* more subtile, or of
less specifick gravity, than *air*.

In the former *chapter* it has been at-
tempted to be proved that no *body* can,
properly, be termed *solid*, tho' of ever
so close a texture, and free from *pores* ;
all bodies having some minute, æthe-
rial *substance* much lighter than *air*,
that has a general correspondence with
whatsoever aerial, or ætherial *sub-
stance* may fill the *cavities* of the rest of
the

the *bubbles* ; tho', at the same time, these *bubbles* are fill'd with something, specifically lighter than *air* ; so that some subtile *fluid* has always a continual *motion* within the *bounds* of every *body* ; and as the *body* is of a more loose, or open, *texture*, this *fluid* is more *gross*, in some *parts* ; but always reserves secret *pores*, wherein none, but the most *spirituous parts*, are admitted to enter : and that *body*, whatsoever it is, that has *pores*, which admit of *particles* into some of its *parts*, or *receptacles*, finer than any that are admitted into another ; that *body* which produces (by its own *separation*) the highest rectified *Spirits* is, by so much the more noble, as its *Spirits*, that it reserves, and separates from its grosser *parts*, are finer than what are separated (tho' from the same sort of *substances*) by another, or other *bodies*.

Stones, metals, minerals, &c. which we reckon inanimate *substances* (tho' I
am

am not, altogether, for depriving them of *life*, or *spirit*) are bodies which do consist of *parts*, or *pores*, almost all alike, and have not any considerable *store* of secret *reserves* of *spirits*, much more subtile than the common *stock*.

Vegetables, which are accounted the lowest degree of animate creatures, have a, very discernable, *difference* in their *pores*, or *fibres*, which may be discern'd by the naked eye, in a *leaf* of any *tree*, or *plant*; wherein may be observ'd *protuberant nerves* swelling, largely, above the *surface* of the smaller textures of the *leaf*: and, by good glasses, may be observ'd in those parts of the *leaf* where the texture is the closest, and no *fibres* to be discern'd by the naked eye, a wonderful complication of small *fibres*; so that the whole *leaf*, not only seems, but may, rationally enough, be suppos'd to be nothing but a texture, of *fibres*, which, by the wonderful *minuteness* of some, scarce visible,

or

or even invisible, *tubes*, and *filaments*,
 are woven into that close, and curious
frame : through every one of these *tubes*,
 or *canals*, according to the *Diameter* of
 its *pores*, is strain'd a *juice* of finer, or
 grosser, *substance* from the *root* of the
tree, *plant*, or *shrub* ; through the
trunk, is strain'd a thick gummy *juice* :
 this *juice* leaves, in the *trunk*, some of
 its grosser *parts* , and carries a thinner
liquor to the finer *branches* ; the *leaves*,
 through their finer *tubes*, can't admit
 of their *juice*, which they receive from
 the *branches* so gross, as what was ad-
 mitted by the *branches* from the *trunk* ;
 but through every one of the smallest,
 and even invisible, *fibres* of its *texture*
 suffer a fluid *liquor* to pass ; which, in
 some of the *filaments* it passes through,
 is resolv'd finer than the *particles* of *air* :
 the *succession* of *matter*, from the *root*,
 forces what is already prepar'd for-
 wards, and the *matter* that is of a less
 specifick *gravity*, than *air*, into what-
 soever

(III)

soever place it is forc'd, will, in that place, frame itself an *organ, fibre, case, or tube*, to flow in; because the ambient, and internal, *air* are both heavier than this spiritual prepar'd *matter*, and must, of necessity, force, and press, the adjacent *matter*, as close to it as its *particles* will permit (or as the *ancients* have held, the spiritual, or more minute *matter* will attract the adjacent *matter* *propter fugam vacui*) and thus the spiritual *matter* frames *filaments* in each place of its *progression*. The course that this spiritual *matter* takes is plain: it first adds *filaments*, or *fibres*, to the *leaf*, in which it is fram'd, and, from that, is forc'd back, to the *branch*, to which it adds *filaments* having *pores* exactly fitted to the *dimension* of its *parts*, and from the *branch*, through the *trunk*, is forc'd back again to the *root*; where it attracts *matter*, or frames *fibres*, out of the *particles* of the *earth*; for these *particles* must, of necessity, be forc'd towards

towards the spiritual *substance*; and these whole *fibres*, or *filaments*, rubbing themselves up together, frame a juicy *substance*, which, by the *departure* of the preceeding *juice*, that fill'd the cavity of the *tube*, by which it is to *ascend*, (this, according to the doctrine of *Hydrostaticks*, ought to be accounted for from the *pressure* of the *Atmosphere*; because in the deserted *tubes* there may be suppos'd to be left a thinner *medium* than *air*) mounts the *trunk* of the *tree*, &c, by large *tubes*, or *pores*; and thus proceeds in its *circulatory motion*; so that even the *juice*, which mounts the *tree*, were it to be *dissected*, would prove only a *complication* of invisible *tubes*, and *fibres*, which have been before form'd in the *leaves*, or *fruit*, of the *tree*, and even that *juice* has, flowing within it, a thinner, ætherial *juice*; which does not quit its place till the whole *frame* of the *body* be destroy'd; therefore when any of these *vegetables* are

are destill'd, they yield first their *phlegm*; and when the ætherial substance, within these smallest tubes, is forc'd to quit its place, it only disposes the remaining watry parts into small fibres, or filaments (into which it insinuates it self, which altogether prove but a little heavier than air) and, with its vehicle of watry matter, falls into the Recipient in the form of what we call an acid Spirit.

If the juice of vegetables (which is only a complication of fibres so join'd that any of them may, by the least motion, be broken, and yet, at the same instant, new fibres created, by the power of the ætherial matter that fills them) be expos'd where the ætherial matter within its fibres, can receive no fresh supplies of matter to form new fibres to lodge it self in (for the old fibres, at any time, expos'd to the assaults of the air; soon become unfit to contain so subtile a matter) by
H wearing

wearing out its *fibres* it suffers, from all *parts* of the *juice*, such *particles*, to flow in upon it as are fit to mix, and incorporate with it, which (it being compos'd of the oleagenous, *parts* of *matter*, because those *parts* are the only *particles* of *matter* that suffer themselves to be divided into *particles* less than *air*) can be only the oleagenous *parts* of the *juice*; the watry *parts*, bearing an *antipathy* to the oily, cannot be made to join, or incorporate, with them; when the *juice*, in this fermented *state*, is distilled, it affords, immediately, a *vinous Spirit*.

SECT.

S E C T. II.

*Of the Seminal, or prolifick
Quality of bodies inspir'd
either with a sensitive, ve-
getative, or rational Soul.*

WHeresoever the *aerial, or spiritu-
al substance*, with which all
bodies that have life, are inspir'd, is
prepar'd; *nature*, in that place, and in-
stant, provides it an *organ* containing
vessel, or pipe, by forcing the adjacent,
and grosser matter to close on it, yet
leaves a cavity, or pores, for it to circu-
late in. And, because all matter is not
prepar'd fit to be a case to the subtile
particles of spirit (for gross bodies whose
particles have not been refin'd are too
porous, nor can their particles be join'd
so close but that the spiritual particles

will slip through) there is also provided an *inferior rank* of *spiritual particles* which, in *minuteness*, differ, but a degree, from the *former*, to close upon the more *spiritual*; these are encas'd within *particles* a degree grosser than the *former*; and these last again are embrac'd by *coffins* of *matter*, of several degrees, which cause the outermost *superficies*, still to consist of grosser *particles* than any that it covers. So that, tho' several of the *inferior coats* may be wholly invisible, as being more minute than the ambient *air*, yet the *exterior* may become very *conspicuous*.

According to the *size*, *disposition*, and several other *qualities* of the finest, or purest, *spirit* of any living creature, there is ordained a suitable subservient *rank* of *particles*, gradually encreasing in *magnitude*, to attend each, even the minutest, *portion* of this *Spirit*: and assist it to draw more, and grosser, *particles*, to it self; to encrease its *body*,
and

and give it the *form*, and *figure*, it obtains it self.

It's suppos'd that every *portion* of *spirit*, has a *shape* or *form*: but this *shape* cannot be seen in *spirit*, because it is a thing consisting of *parts*, more *minute* than the *medium* in which every thing is perceiv'd: and this *shape*, or *form*, is given to it by joining to it subservient *degrees* of grosser *spirits*: for the first *spirit* or the *Deity* is not to be apprehended by *form*.

The spirituous *parts* of a *plant* compose (tho' unperceivable) one whole true, and perfect, *form* of the *plant*; exhibiting all the *fibres* that afterwards are made *manifest* in the grown *plant*; yet, even when largely grown, there remain some intermediate *fibres* in its *texture* which are, scarcely, visible.

This *spiritual form*, is enclos'd in some *portion* of the common *texture* of the whole *plant*; and termed *seed*: which *seed* consisting of every *bow*,

branch, vein, and fibre, that is perceivable in the grown plant, in absolute form, each of these parts of the plant draws (to keep and better contain the spiritual matter that is within these, tho' minute branches) and arms them from being injur'd by the external air acting too harsh on its tender tegument and grosser particles to its exterior surface : every fibre, proportionably increasing with the whole : at first, only a just visible, resemblance of the parts is produc'd, which are, in time, extended to their due proportion.

From a *parallel* reason it may be concluded that the *soul* of a *sensitive animal*, and every *portion* of it, contains the true, and perfect, *form* of the *animal*, that is inspired by it ; perhaps it may be argued that the *soul* is held *indiscerpable* ; this I grant, in the *rational soul*, may hold true, but if *indiscerpability* be attributed to the *animal soul*, how shall we account for the *parts* of

of *earth-worms*, *eels*, and several other *animals*, moving after they are separated one, from the other, and yet when they were all joined they had but one common *soul*, or *principle of life*, and *motion*.

If then the *soul*, of a sensitive *animal*, bears the exact *form* of the *animal*, and this *form* only proves *invisible* from its being a thinner *substance* than the *medium of vision*; the least *portion* of this *soul*, conveyed into a convenient *receptacle*, where it may receive *heat*, and sufficient *nourishment*, or *particles* of fit, adapted, *matter*, to join to it, will, thereby, *encrease* it self, and grow stronger by *attracting* more *matter* to strengthen its *case*, or *vehicle*.

I am sensible this *thought* may be subject to *ridicule*; for, says one, a pretty *conceit*! the *Soul*, as suppose of a *dog*; must altogether, be thought to have the *form* of a *dog*; and yet, at the same time, every, even the minu-

test, *particle* of that which in the whole, is but a *part* and may, perhaps, only be a *particle* that conduces to make up a *leg*, or a *claw* of this invisible *form*, must be thought to have, it self, *head*, *legs*, *tail*, *body*, &c.

To this I answer ; that *spirit*, as it is purely *spirit*, has no *form* at all ; but when we talk of it with *form*, we only represent, to the *mind*, the *figure* which is made by the *septum*, or *vehicle*, that bounds it from the *medium* of *air* ; or what other *medium* surrounds it : as a *field* covered all with *grass*, and *plain*, can be said to have no other differing *form* from another *field*, whose *surface* is, equally, *green*, and *level* with it ; than the *figure*, or *shape*, of of the *wall*, or *hedge*, that surrounds it : nor does one drop of *water* differ any otherwise from the whole *quantity*, or *bottle*, from which it was dropt, than that it is bounded with something of a differing *shape* from the *shape* the whole

whole received by the vessel in which it was kept.

To make the case plainer. Suppose in *water* a *quality*, or *power* (as it seems in *drops* to have, each falling in a *spherical figure*) to be contained in no other vessel, or vehicle, than what is exactly round; and this *water*, when poured out of a round vessel, should have power to force the other vessel it is poured into, tho' of a differing figure, into a *shape* fit to contain it, which is to be no other form than round: to make this applicable to the *Soul*, 'tis very just to believe the *Soul* has a power to force its vehicle into such a form as it is disposed to be contained in, and tho' part of it, before separation was content with the form, which the whole was contained in; yet by separation, it must, it self, seek a new vehicle, or case, to keep it self in; and since this case must have some form, what form may be supos'd more proper to give the
the

the *case*, than the *form*, it was before so well us'd and endur'd to ?

From these *thoughts* it will be no hard matter to conceive how the *seeds* of all *bodies*, that have *life*, enjoy the *form* of the *plant*, or *animal*, from which they were sent ; the *plant* affords its *seed* when in its *bloom*, it grows *luxuriant* ; and the *life*, or *soul*, or *spirit*, of it, within, waxes *exuberant* ; the *animal* swell'd with *life*, or *spirit*, feels a more pleasing *sensation*, than ordinary ; and in its full and perfect *vigour*, urg'd by the *embraces* of a *female consort*, forces *seminal*, or *inspir'd*, matter from it to make more *room* for the *exultations*, that the *soul* receives, by the *desire* of *copulation*, both the *animal*, and likewise the *vegetative*, *seed*, may well be thought to enjoy, part of the *soul* of the *plant*, or *animal*, from which it flow'd ; and this part of the *soul* may be, reasonably enough, believed, immediately to give to the *vehicle*, that contains

contains it, the *form* the whole *soul*, or *spirit* has bestowed on its *case*, or *vehicle*.

S E C T. III.

*The Soul of Brutes consider'd
as it is the cause of sensa-
tion.*

THE *Soul* that inspires *vegetables*, receives so great an *alloy* from *matter*, and it moves so slow that it suffers, a far more, durable covering to be drawn about it, than what surrounds *animals*; by this means (the texture of its covering being very solid, close, and compact) it does not suffer half the expence, of *spirit* by insensible perspiration, as the *bodies* of *animal* do; neither is there so great a necessity in *vegetables*, of constant, and profuse, supplies

Supplies of *matter* (to make up their daily *loss*) as *animals* require; besides the supplies that *animals* have from *matter* they receive by suffering the *matter* gross, as it is, to enter their *bodies*; and there to be dissolved, and made fit for their *nourishment*, out of which it chuses proper *parts*; and rejects, and sends off as *excrementitious* such as are disagreeable to the animal *soul*.

But *vegetables* are of so entire a *texture*, that they admit of nothing within their *body* but such prepared, and refin'd, *particles*, as *nature*, by the heat of the *Sun*, adapts for them out of the *earth*; that is, immediately, adjacent to their *roots*.

In *vegetables*, the ætherial *substance* which inspires the whole *plant* with *life*, has not a free *Communication*, but by the *interposition* of its *vehicle*, is divided, as it were, into *parts*; so that when one *part* suffers by being *tore* or *seperated*, the others receive no *disturbance*, or *Sensation*; the contrary happens to
animals

animals whose *Soul*, or *Spirit*, has an
 absolute *Communication*, each part, with
 the *whole* ; which must, of necessity,
 cause *motion*, and *sensation* ; *motion*,
 as if a *bladder* blown with *air*, and sunk
 to the *bottom* of *water*, by a suspended
weight, if this *air* could contract, and
 dilate, its *body* tho it could not make
 the *weight* rise, but very little, from its
place yet it would move it self round the
space it is confined to: and if the *string*,
 that ties it to the *weight*, be lengthen-
 ed, the elasticity of the internal *air*,
 moving, would force the *bladder* to
 move to the extent of the *string*, that
 confines it ; this is the very cause of *mo-*
tion in *animals*, whose *bodys* are *cases*,
 or *vehicles*, that contain several degrees
 of *ætherial substances* ; the grossest of
 which differs, as much, in specifick
gravity from the *air*, as the *air* differs
 from *water* ; these several degrees have
 also *separation*, and *difference*, amongst
 one another ; but so that, upon the
 least

least occasion, these separations may open, and let in some of the grosser of the *atherial substance* upon the place, or space, wherein the purer resides; and again, at pleasure, force it out; this is analogous to what would happen to a bladder, forceably, detained under water, if suppos'd to suffer, in the air by which it is blown up; a *Sustole*, and *diastole*, each of which motions, must, of necessity, force the bladder to move; or, as it were, give it a force, or endeavour, to emerge, and rise to its proper element: and because in the Soul, or Spirit, of animals, there is an entire *Communion*, or rather *union*, of the whole, it being, in any part, affected either by the motion of the air which causes vision, or by the motion of the air which operates on its auditory organs; or by the quality of the *effuvia*, of neighbouring bodies, which strike upon the *olfactory organs*; or by the disposition of the particles of matter that it receives into its body,

body, or vehicle; or by the meeting with, or striking, its vehicle against any other body; all these several motions, as they happen to any part of the vehicle, must affect the Soul by forcing some of the grosser particles of ætherial matter in upon the purer; and this motion, directed either to avoid, or pursue, the object or first motion, that is the cause of sensation, to the soul.

A P P E N D I X.

THE *Author* has, insensibly, led himself to the *consideration* of the *rational soul of man*; but seeing that is a *subject* requires, no small, *leisure*; he is willing to receive the *judgment*, of others, how far he may proceed upon the *principles*, already, laid down; before he dare go about so *dangerous* an *undertaking*.

F I N I S.

body, or mind, or by the meeting
with, or thinking, or writing against
any other body, and these several mo-
tions as they happen to any part of
the body, the mind, or the soul, by for-
cing some of the parts of the body
to move, and thus motion, or
the cause of motion, to the soul.



APPENDIX

THE Author has, indispensably, led
himself to the consideration of the
rational soul of man; but being that is
a subject requires no small labour; he
is willing to rectify the judgment, not
others, how far he may proceed upon
the principles already laid down; be-
cause he is not about to disagree an

